

HP Netserver LP 1000r User Guide



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Audience Assumptions

This guide is for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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1 Controls, Ports, and Indicators

Introduction

Before operating the HP Netserver LP 1000r, familiarize yourself with the Netserver's controls, ports, and indicators, as shown in Figures 1-1 through 1-3.

Front Panel

The front panel of the HP Netserver provides the controls and indicators commonly used when operating the Netserver.

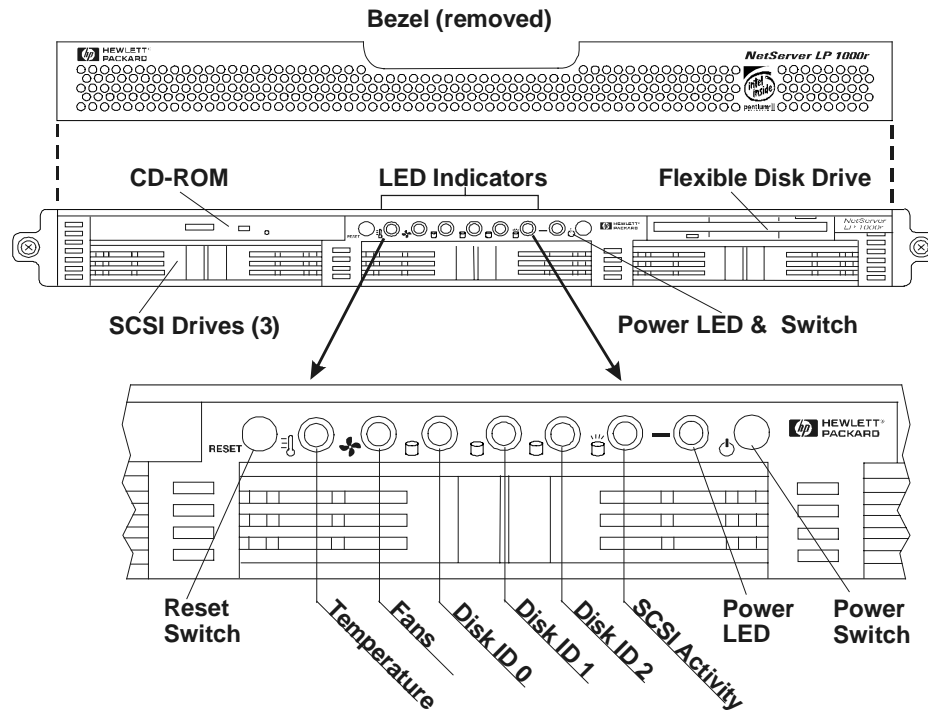


Figure 1-1. Front Panel

Tables 1-1 and 1-2 describe the front panel controls and indicators in the center of the front panel. Refer to Figure 1-2 for the mass storage controls and indicators.

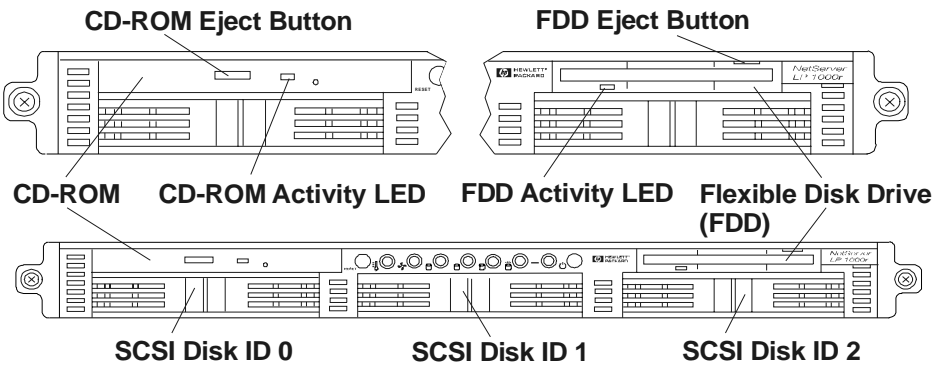


Figure 1-2. Input and Storage Device Controls

Table 1-1. Power Switch and Indicators

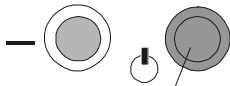
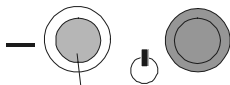


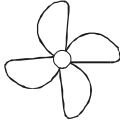
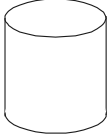
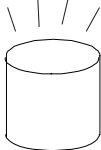
Control/Indicator	Description
Power On/Off/Sleep Switch  Push-button Switch	<p>This push-button switch turns the HP Netserver power On or Off, and if available, also transitions the Netserver between Power On and sleep states. If sleep states are not available, then this button only turns power On or Off.</p> <p>The sleep states are NOS dependent and not available if your NOS does not support power management based on the ACPI (Advanced Configuration and Power Management Interface) standard. Refer to "Applying Power to the HP Netserver" and "Sleep States (ACPI)" later in this chapter.</p>
On/Off/Sleep LED  LED	<p>This green LED provides the power state of the Netserver:</p> <ul style="list-style-type: none">• Steady Green when the Netserver is operating normally• Blinking Green at 1-Hz rate indicates the Netserver is in a sleep state and under ACPI control• Off (unlit) when the Netserver is powered off or in standby
Reset Switch  RESET Push-button Switch	<p>This push-button momentary switch creates a hard system reset. This is the equivalent to a power-on reset.</p>

Table 1-2. Component Indicators

LED ICON	Description
Temperature LED 	<p>This Temperature LED has four distinctive states and is linked to the two processors and a sensor on the system board.</p> <ul style="list-style-type: none"> • Steady Green for normal operation. • Alternating Green/Red indicates the temperature has crossed the warning threshold. If this condition continues a system crash and possible data corruption will occur. Must take action to correct problem. • Steady Red indicates the temperature has exceeded the critical threshold. If the shutdown feature is currently enabled in HP Integrated Remote Assistant software, the Netserver shuts down to prevent processor or system board damage. By default, the shutdown feature is not enabled. Refer to Chapter 10, "Configuring the HP Netserver" to enable the shutdown feature. • Steady Off (unlit) for power off condition.
NOTE	<p>The processors used in this HP Netserver have a thermal sensor inside the processor package which monitors the chip temperature. If the processor crosses the critical threshold it shuts down operation to prevent damage to the processor, but this may cause a system crash and possible data corruption. The Temperature LED monitors these two sensors and one additional sensor on the system board.</p>
Fan LED 	<p>This Fan LED has four states of operation. The sensor connected to this LED monitors the speed of all four fans in the HP Netserver (including the power supply).</p> <ul style="list-style-type: none"> • Steady Green for normal fan speed operation • Alternating Green/Red indicates one or all fans have slowed down (crossing warning threshold). If this condition continues a system crash and possible data corruption will occur. Must take action to correct problem before temperature starts to rise. • Steady Red indicates a fan is turning slower than its critical speed. However, this will not cause the Netserver to shutdown. • Steady Off (unlit) for power off condition.

LED ICON	Description
Disk ID 0, ID 1, and ID 2 LED 	<p>These Disk LEDs have five distinctive states for the respective SCSI disk drive:</p> <ul style="list-style-type: none"> • Off for SCSI drive not present • Steady Green for SCSI drive present • Steady Red for a SCSI drive failure • Alternating Green/Red at 1 Hz blink rate for a SCSI drive rebuild • Alternating Green/Red at 3 Hz blink rate for SCSI drive identification
SCSI Activity 	<p>This LED is the SCSI Hard Disk Drive Activity indicator and has two states:</p> <ul style="list-style-type: none"> • Flickering Green when there is SCSI activity • Off when there is no power or SCSI activity

Rear View

The ports and connectors at the rear are listed below and shown in Figure 1-3.

- The power connector accepts a standard power cable to connect the HP Netserver LP 1000r with a UPS (Uninterruptible Power Supply) or the site power source.
- The mouse port accepts a standard mouse with a PS/2 connector.
- The keyboard port accepts a standard keyboard with a PS/2 connector.
- The USB (2) ports are provided for printers, scanners, and external modems and do not support the keyboard or the mouse.
- The Parallel Port is a standard parallel port which supports Extended Capabilities Port (ECP)/Enhanced Parallel Port (EPP).
- The Serial A/MGMT Port is a standard serial port which can be used for serial devices or for management functions. For more information on management functions refer to Chapter 10, "Configuring the HP Netserver."

- The Video Port interface specifications are listed in Table A-4, "HP Netserver Hardware Specifications" and Table A-5, "Video Display Modes" of Appendix A, "Specifications."
- The two LAN ports (LAN A/MGMT and LAN B) are for embedded controllers based on Intel's 82559 10/100 BaseT Fast Ethernet controller. Only LAN A/MGMT is used with Alert-on-LAN 2 (AOL2) and Wake-on-LAN remote management functions. Each one has a RJ-45 LAN connector and two LEDs to indicate LAN speed and valid connection. Refer to Table 1-3 for the LAN LED indicators and Chapter 10, "Configuring the HP Netserver."
- The external SCSI port provides access to external SCSI devices, typically an external SCSI tape back-up device.

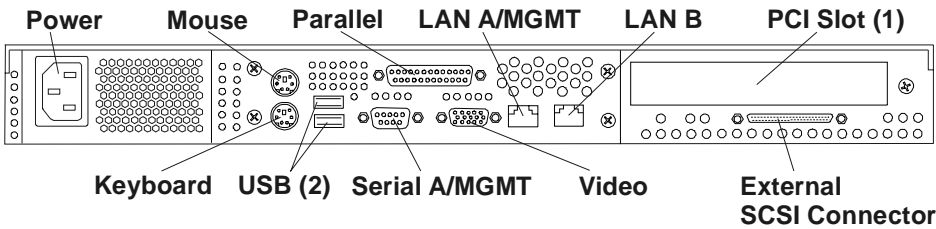


Figure 1-3. Rear Panel and Ports

Table 1-3. LAN Port (RJ45) LED Indicators

Indicator	Definition
<div>Link LED</div> <div></div>	<div>This green LED is the activity/link indicator.</div> <ul style="list-style-type: none">• Steady On indicates a valid LAN link.• Flashing On indicates there is LAN activity.
<div>LAN Speed Indicator</div> <div></div>	<div>This yellow LED is the LAN speed indicator.</div> <ul style="list-style-type: none">• Steady Off indicates the LAN is operating at 10 Mbps LAN speed.• Steady On indicates the LAN is operating at 100 Mbps LAN speed.

Applying Power to the HP Netserver

Powering-Up the Netserver

NOTE	Turn on power to the monitor connected to the HP Netserver before you power-on the Netserver. This allows proper auto-configuration of video output of the Netserver as it boots up.
-------------	--

1. Ensure the HP Netserver's power cord is connected to the power source. See Figure 1-3.

2. Press the Power push-button on the front control panel. See Figure 1-1.

When you press the power button on the control panel, the Netserver powers up and loads the operating system. The system runs a set of power on self tests (POST) during this process. For details refer to Chapter 12, "Troubleshooting."

Powering-Down the Netserver

1. Log off all users and, if necessary, backup files.
 - ◇ Schedule the power down for a time when it will affect the fewest users.
 - ◇ If you will be doing any kind of hardware or software upgrade, ensure the Netserver's data has been backed up.
 - ◇ Follow instructions in your network operating system (NOS) documentation to shut down all networking software and applications.

WARNING	The power supply will continue to provide standby current to the Netserver until the power cable is disconnected from the rear panel.
----------------	---

2. Press the power switch on the HP Netserver's control panel when prompted by the operating system.

Normally this completes the power-down procedure.

Connecting AC Power to Multiple-Server Configurations

The HP Netserver temporarily draws a large "inrush current" when first connected to an AC power source. This also occurs when the Netserver is in a standby mode (power is turned off, but the power cord is plugged into AC power). The inrush current is much greater than the Netserver's normal operating current, and generally the AC power source can handle the normal inrush current.

However, if you install several HP Netservers on one circuit, precautions are necessary. If there is a power failure and power is then restored, all the servers immediately begin to draw inrush current at the same time. If the circuit breakers on the incoming power line have insufficient capability, the breaker may trip and thus prevent the servers from powering up.

When preparing your site for installation, allow for the additional inrush current. Refer to Table A-1, "System Power Specifications," in Appendix A, "Specifications."

Sleep States (ACPI)

The HP Netserver supports the ACPI (Advanced Configuration and Power Management Interface) standard, which is a key component of a NOS's directed power management. The supported features are only available when an ACPI-compliant NOS is installed on the Netserver. The term "sleep state" refers to any of several reduced power consumption states in which normal NOS activity has ceased.

The Netserver supports several sleep states. One of these is a "standby" or "suspend" sleep state, which has a short wake-up time. In this sleep state the Netserver appears to be off — the monitor appears blank and there is no CD-ROM or SCSI hard drive activity. However, the power LED flashes slowly and the fans continue to operate.

An additional sleep state supported by the Netserver is one with a slower wake-up time, sometimes referred to as "hibernate" by various operating systems. In this sleep state, the Netserver appears to be off as mentioned earlier, but the fans and the power LED are also turned off. The unique feature of this sleep state (and the reason for its slower wake-up time) is that information about the Netserver's NOS state (open applications, screens, and so on) is saved to disk before the Netserver is placed in the sleep state. Upon wake-up, this information must be restored from disk. This method of restoring the Netserver's operation is much faster than a complete rebooting of the Netserver. It still requires running all the start-up self-tests before starting the NOS, but loading the NOS and all the previously opened applications is much faster.

The Netserver supports certain types of system activity, which is used as wake-up events from these sleep states. These wake-up events can be generated from the power button, LAN activity, and scheduled events.

NOTE	The HP Netserver's power management policies (transitions between various power states) and the user options are specific to the particular ACPI-compliant NOS installed on the Netserver. If your NOS is ACPI-compliant, refer to the power management features in the NOS instructions provided for more information.
-------------	---

The HP Netserver's power button can be configured to initiate a graceful shutdown or "soft off" of the NOS rather than an immediate shutdown of the power supply. The power button configurations are dependent on the user interface provided by the ACPI-compliant NOS. While power management is under the control of the ACPI-compliant NOS, the HP Netserver's power button is capable of an override in case of a non-responsive NOS.

NOTE	The HP Netserver power button will force a power down without waiting for the NOS to gracefully shut down the Netserver, if the power button is pressed and held for more than four seconds.
-------------	--

CAUTION	If the power button override is used, there is a strong possibility of corrupted or lost data.
----------------	--

2 Opening and Closing the HP Netserver

Introduction

This chapter describes how to remove the top cover, front bezel, and the air duct from the HP Netserver LP 1000r.

WARNING	Before removing the top cover, always disconnect the power cord and unplug telephone cables. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages.
----------------	---

Tools Required

The following tool may be needed to remove the air duct for the first time:

- ¼-inch flat blade screwdriver (for the air duct)

Removing the Front Bezel

The front bezel is provided to protect the power and reset switches from accidental disabling.

To remove the front bezel, follow these steps:

NOTE	You do not need to remove the front bezel to remove the top cover of the Netserver. You do need to remove the front bezel to install mass storage devices or media.
-------------	---

1. If the Netserver is operating, you do not need to turn off power to remove the front bezel.
2. Release the front bezel by placing your hand at the center of the half-moon opening in center of the front bezel. See Figure 2-1.
3. Pull out towards you on the front bezel.

The bezel rotates down to approximately an 80° angle.

4. Pull and lift the bezel out toward you and remove it from the chassis. See Figure 2-1.

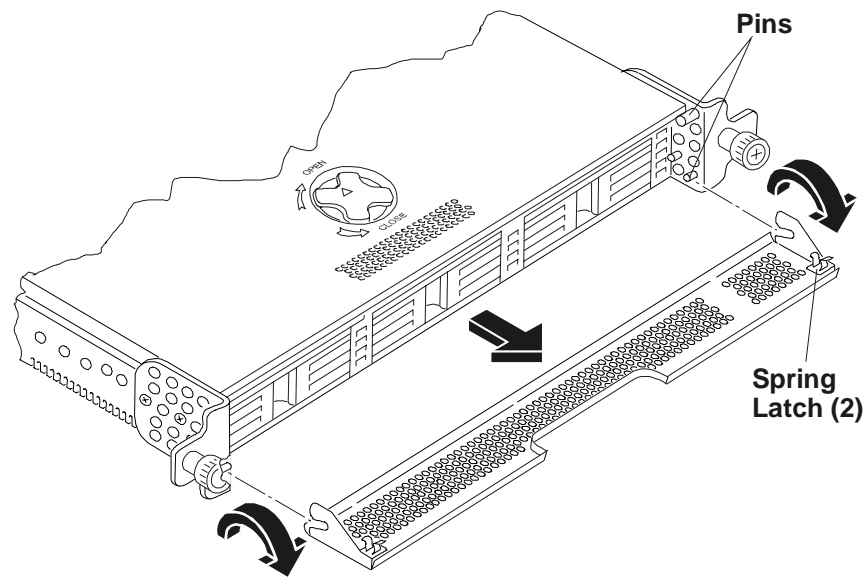


Figure 2-1. Front Bezel Location

NOTE

The front bezel pivots on two pins at the bottom and is held in place at the top with spring latches holding onto the top pins. The middle pins limit bezel rotation to an 80° angle.

Replacing the Front Bezel

1. Place the bottom edge of the front bezel into the hinge pins at the bottom front of the chassis.
2. Rotate the top front of the bezel into place and push it in at the top, allowing it to snap into place.

The spring latches grasp the pins at the top and hold the bezel in place.

Removing the Top Cover

To remove the top cover, follow these steps:

NOTE	You do not need to removal the front bezel to remove the top cover of the Netserver.
-------------	--

1. If the HP Netserver is operating, log off all users and shutdown the operating system.
Refer to the instructions in Chapter 1, "Controls, Ports, and Indicators."
2. Disconnect the power cord and any cables attached to the Netserver.
3. Remove the Netserver chassis from the rack and lay it on a flat surface.
Refer to the instructions in Chapters 7, 8, or 13 (depending on the rack type) to remove the chassis from the rack.

NOTE	Some rack mounting options (slides) do not require removing the HP Netserver chassis from the rack and laying it on a flat surface to access the internal components.
-------------	---

4. Release the top cover by turning the knob at the front of the chassis to "Open" position (clockwise direction). See Figure 2-2.
5. Slide the top cover about 1½ inch (38 mm) toward the front of the Netserver and then lift it off the chassis.

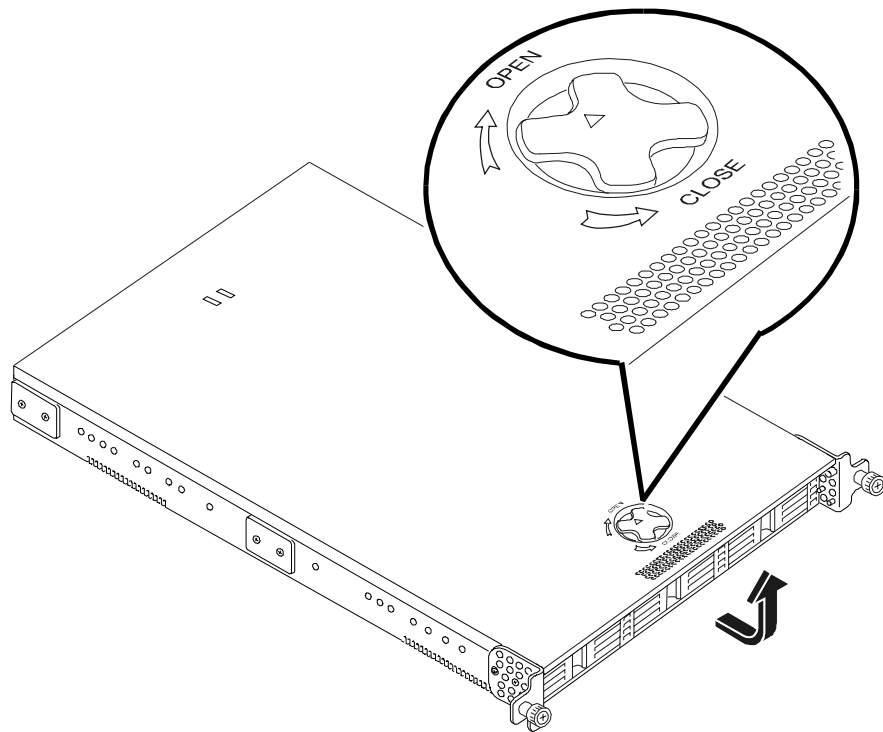


Figure 2-2. Removing the Top Cover

Replacing the Top Cover

To replace the top cover, follow these steps:

1. If the HP Netserver is already laying on a flat surface with no power applied, continue with Step 5.
2. If the HP Netserver was operating with the cover removed, power down the operating system and turn off the Netserver's power switch.
3. Disconnect the power cord and any cables attached to the Netserver.
4. Remove the Netserver chassis from the rack and lay it on a flat surface.
5. Ensure the knob is turned to the "Open" position (clockwise position). See Figure 2-2.
6. Place the rear edge of the top cover on the rear edge of the chassis and lay it down on the chassis.

7. Rotate the knob to the "Closed" position (counter clockwise position).
See Figure 2-3.

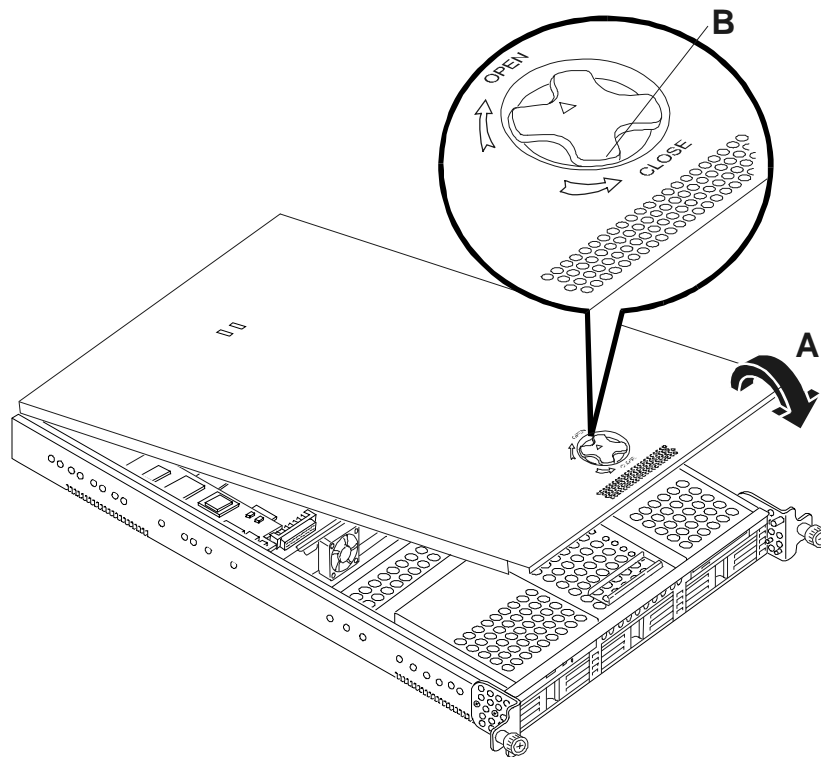


Figure 2-3. Replacing the Top Cover

8. Install the Netserver back into the rack and secure it to the rack.

Refer to the instructions in Chapters 7, 8, or 13 (depending on the rack type) to install the chassis back into the rack.

NOTE	Some rack options do not require removing the HP Netserver from the rack to remove or replace the top cover.
-------------	--

Removing the Air Duct

The air duct directs air from the fan onto the heatsinks of both processors. The air duct also restricts access to both processors and all the DIMMs, and must be removed for full access.

1. Loosen the two captive screws holding the air duct to the system board.
See Figure 2-4.
2. Remove the air duct from the system board.

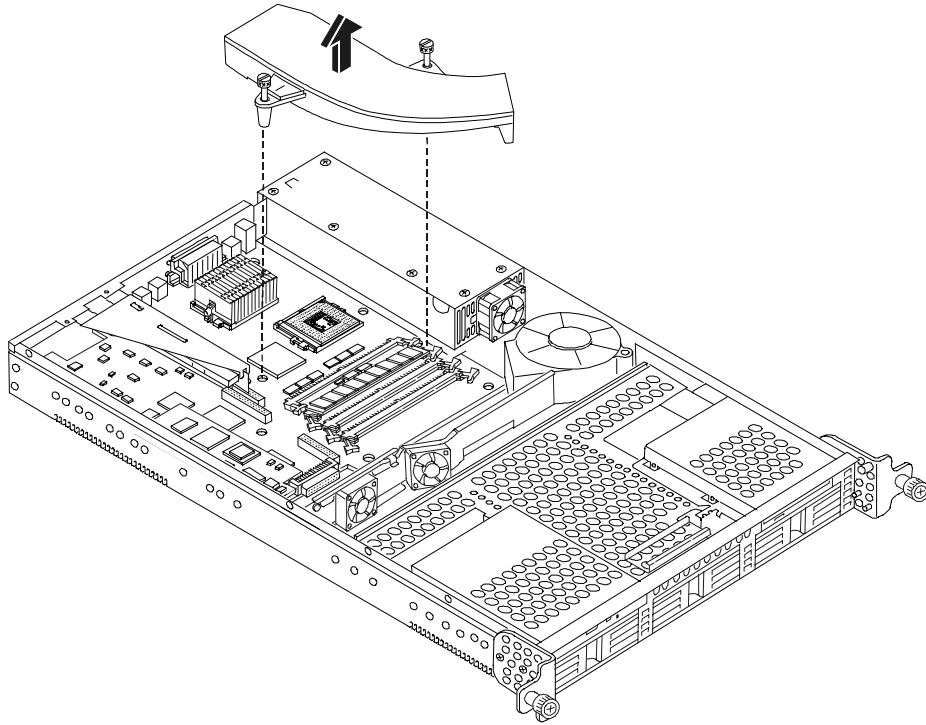


Figure 2-4. Removing the Air Duct

Replacing the Air Duct

To replace the air duct, simply reverse the steps in the previous procedure.

3 Installing Mass Storage Devices

Introduction

The HP Netserver LP 1000r comes standard with an IDE CD-ROM and a flexible disk drive. The Netserver will accept up to three Hot Swap SCSI hard disk drives (HDD) in special mounting tray adapters. At least one Hot Swap SCSI hard disk drive is required for booting the Netserver. An optional SCSI tape backup drive may be connected to the external SCSI connector at the rear.

Tools Required

Check the mass storage device's documentation for tool requirements if the drive is not mounted in the mounting tray adapter.

- Phillips screwdriver (only required if it is necessary to mount SCSI drives in the mounting tray adapter)

Mass Storage Guidelines

- General Guidelines
 - ◇ Use care when unpacking and handling the SCSI disk drives.

The hard disk drives are very susceptible to mechanical shock and can be easily damaged by a drop as short as one-quarter of an inch. If the drop would crack an egg, it will damage the drive.
 - ◇ Do not stack drives when out of the Netserver chassis.
 - ◇ The Netserver is internally limited to 5 mass storage bays.

The flexible disk drive and CD-ROM drive, which are standard on all models of the HP Netserver LP 1000r, occupy bays 1 and 2 respectively. See Figure 3-1.

The three remaining bays, 3, 4, and 5 are reserved for Hot Swap SCSI hard disk drives (HDD).
 - ◇ If a backup tape drive is used, it must be connected externally using the external 68-pin SCSI connector at the rear of the Netserver.

- IDE Devices
 - ◊ The embedded IDE controller is an Enhanced-IDE dual channel controller and provides two connectors (IDE-1 and IDE-2) for IDE devices.

Refer to Figure A-1, "System Board Layout," in Appendix A, "Specifications."
 - ◊ The IDE CD-ROM has only one connector on the cable from the primary channel (IDE-1) connector.
 - ◊ A secondary IDE connector (IDE-2) is available, but is not used.
- SCSI Device Selection
 - ◊ Use only HP LVD low profile (1 inch) SCSI 3.5-inch hard disk drives for the Hot Swap drive bays.
 - ◊ If mounting available SCSI drives in drive trays, ensure you use the mounting tray adapter recommended by HP, which is HP part number P2452A.
 - ◊ Ensure the SCSI devices you install in Hot Swap bays do not have terminations installed. The Hot Swap backplane provides automatic termination for any unused bays. The HP Hot Swap SCSI drives come set without device ID or termination. Do not change these settings.
 - ◊ Do not use high voltage differential (HVD) SCSI devices on either of the SCSI channels or damage will occur.
 - ◊ The embedded dual-channel Ultra-3 SCSI controller includes connectors for SCSI channels A and B.
 - ◊ Channel A is used for connection to the SCSI backplane board, which provides three 80-pin connectors for Hot Swap SCSI drives. The standard SCSI cable has one 68-pin, high-density connector for the SCSI backplane, which provides for automatic termination of the SCSI drives.
 - ◊ Channel B is used to control external mass storage devices, including an external backup tape drive.

Channel B is connected to the external 68-pin SCSI connector on the rear of the Netserver.

- SCSI Drive Addressing

- ◊ The addresses of the SCSI drives are automatically assigned by the drive bay location in the chassis. Refer to Figure 3-1.

No SCSI ID software settings or jumpers are required if using a HP NetRAID Controller board inserted into the only PCI slot.

- SCSI Device Installation Order

The three Hot Swap bays support various SCSI HDD configurations.

- ◊ Start from the left side of the chassis when adding Hot Swap SCSI hard drives in the HP Netserver.

- Filler Panels

- ◊ Ensure all empty bays in the chassis have filler panels inserted before powering on the Netserver to ensure proper airflow. If there are empty bays, the existing drives and the Netserver may not receive the proper ventilation and could suffer thermal damage.

CAUTION

To prevent overheating or excessive electromagnetic radiation, use the filler panels to fill the empty bays. If the filler panels are left out of the drive bays, thermal damage and/or excessive EMI could occur.

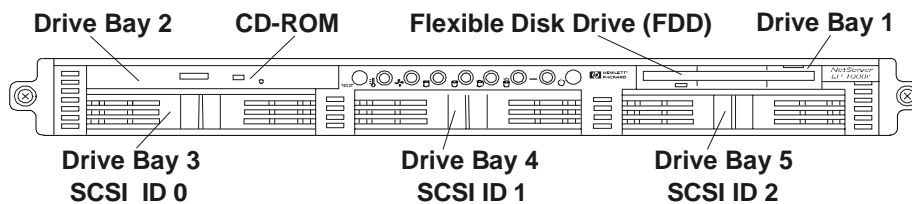


Figure 3-1. HP Netserver Drive Bays

Boot Priority

The Netserver's boot order should be considered when selecting a boot device. This is especially important if you are installing a board that requires an early number in the boot order. The board's boot priority is set by its location in the boot order.

By default the Netserver searches for boot devices in this order:

1. IDE CD-ROM drive
2. Flexible disk drive
3. Embedded SCSI A channel (Hot Swap SCSI Drives)
4. Embedded SCSI B channel (external SCSI Devices)
5. PCI slot 1
6. Network connection

The embedded SCSI controller consists of two channels, A and B. Channel A is used to control the Hot Swap SCSI hard drives (3). Channel B is used to control the external SCSI devices. On each SCSI channel, the controller scans for a boot device starting at device ID 0 and works through the ID numbers. The Netserver's embedded controller is always SCSI ID 7.

For information about booting from a hard disk connected to an accessory board, see "Installing a Disk Array Controller Board" in Chapter 5, "Installing Additional Boards."

NOTE

The boot order can be changed using the Netserver's (BIOS) Setup Utility and the SCSI Select Utility. Refer to Chapter 10, "Configuring the HP Netserver," for more information.

Hardware Mirroring

You may choose to mirror hard drives (RAID 1) in the HP Netserver's hot swap bays. However, doing this through the software slows down disk access time, but using hardware mirroring can help speed up disk access time.

Hardware mirroring requires installation of a HP NetRAID Controller in the only PCI adapter slot. An additional SCSI cable must be used to connect the NetRAID board to the SCSI backplane connector. If you do not use a supported HP NetRAID Controller board, ensure you use a DAC with an LVD interface.

CAUTION To prevent damage to the Hot Swap SCSI hard disk drives, don't use a HVD (high voltage differential) DAC controller.

If the hardware mirroring option is required (which uses the SCSI channel of the HP NetRAID Controller board), refer to "Optional SCSI Drive Controller" later in this chapter. The instructions describe how to move the SCSI cable from the system board to the SCSI connector on the HP NetRAID Controller board. Refer to the documentation provided by the supported HP NetRAID Controller board for external cabling requirements.

Installed Mass Storage Devices

Table 3-1 lists the number and types of mass storage devices that may be installed into the HP Netserver LP 1000r.

Table 3-1. SCSI Mass Storage Device Types

Interface Types	Max Number of Devices	Installed Devices and Addresses
Flexible disk drive	1	Factory installed flexible disk drive in drive bay 1
IDE-1	1*	Factory installed CD-ROM drive in drive bay 2 (Primary IDE connector)
Ultra-3 SCSI Channel A	up to 3 **	<ul style="list-style-type: none"> • Factory installed Hot Swap SCSI hard drive in drive bay 3 (address = ID 0) • Up to two additional Hot Swap SCSI hard disk drives in bays 4 and 5 (addresses = ID 1 and ID 2, respectively) • Embedded SCSI controller (address = ID 7)
Ultra-3 SCSI Channel B	up to 15 **	<ul style="list-style-type: none"> • Control of up to 15 external SCSI devices

* The primary IDE (IDE-1) cable is connected to the factory-installed CD-ROM drive. A secondary IDE connector (IDE-2) is available, but is not supported by Hewlett-Packard.

** Both SCSI channels (A and B) can each support up to 15 devices; however, there are only enough internal storage bays for three Hot Swap SCSI hard drives. Channel B is used to control external SCSI devices, typically a SCSI tape back-up device.

Installing Hot Swap Hard Drives

Use this section to install the SCSI hard drives in the Hot Swap drive bays.

CAUTION

Protect the drive from static electricity by leaving it in its anti-static bag until you are ready to install it. Before handling the drive, touch any unpainted metal surface to discharge static electricity. When you remove the drive from the anti-static bag, handle it only by the frame.

Do not touch the electrical components. Place the drive on the anti-static bag whenever you set it down.

1. Remove the filler panel from the desired drive bay location:
 - a. Place a thumb and index finger on the tab latches on the sides of the filler panel, as shown in Figure 3-2.
 - b. Press in on both tab latches to release the filler panel.
 - c. While keeping both tab latches depressed, pull the filler panel out of the drive bay. See Figure 3-2.

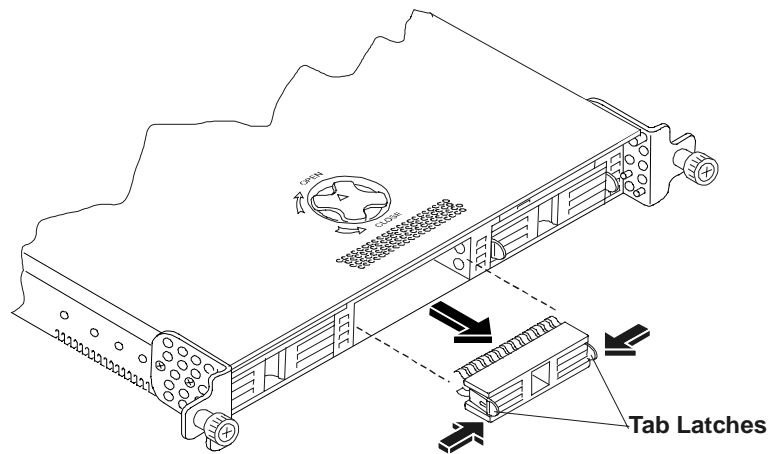


Figure 3-2. Releasing the Filler Panel's Tab Latches

CAUTION

Save the filler panel for future use. If the filler panels are left out of empty drive bays while the Netserver is operating, thermal damage and/or excessive EMI could occur.

2. Remove the SCSI drive from its protective packaging and open the ejector arms as shown in Figure 3-3.

The SCSI drive should already be mounted in the Hot Swap mounting tray adapter.

- a. Place both thumbs in the center opening at the front of the SCSI drive.
- b. Pull outward on both ejector arms, which moves the locking tabs inward. See Figure 3-4.

You should hear the each ejector arm click as you pull it outward.

3. Gently slide the SCSI drive into the chassis, until you feel resistance. See Figure 3-3.

The drive will meet resistance about a quarter of an inch before completely seating in the drive bay.

4. Push the drive in firmly (all the way) to seat the drive in the connector on SCSI back plane.

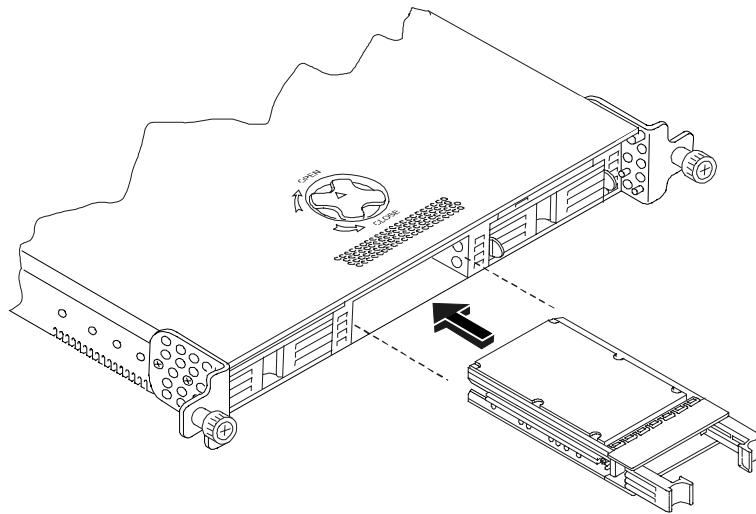


Figure 3-3. Inserting the Drive

CAUTION	To prevent snapping off the ejector arms do not apply excessive pressure.
----------------	---

5. Close the ejector arms by rotating each one back into place. See Figure 3-4.

6. Verify the tab on each ejector arm engages the edge of the drive bay as you close it. See Figure 3-4.

You should feel each ejector arm click into place when it closes completely. Closing both ejector arms engages the drive with the electrical connector at the rear of the Hot Swap drive bay and seats the drive.

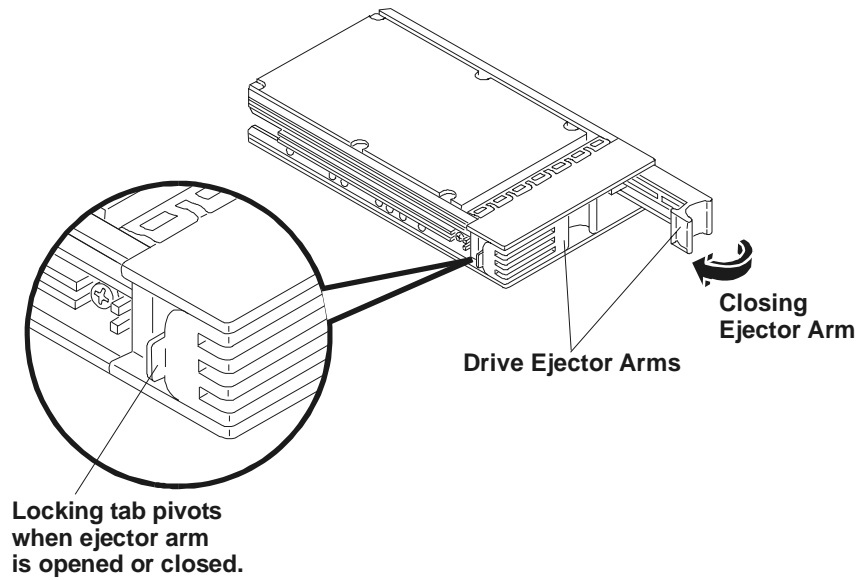


Figure 3-4. Closing Drive Ejector Arms

7. If the drive is unseated in the drive bay after closing both ejector arms, repeat this procedure from Step 2 to 5.

The ejector arms may not have opened enough to engage the tab, or the SCSI connector failed to engage the SCSI connector at the rear of the Hot Swap drive bay.

NOTE

Closing both ejector arms will ensure the drive connector engages the electrical connector in the Hot Swap drive bay and seats the drive.

Removing Hot Swap Hard Drives

CAUTION	<i>You must remove the drive slowly and then wait for the drive heads to park before completely removing the drive. Ensure you follow these instructions carefully to prevent handling damage, such as head slaps or head actuator unlocking.</i>
----------------	---

1. To unlock the drive and remove it:
 - a. Place both thumbs into the opening at the center of the drive.
 - b. Pull out on both ejector arms with both thumbs at the same time.
You should hear the each ejector arm click as you pull it outward.
 - c. Pull both ejector arms toward you. See Figures 3-4 and 3-5.
2. Gently pull the drive out about an inch to disengage the power connection.
3. Wait about 30 seconds for the drive to stop spinning and for the drive heads to park.
4. Use your hand to support the bottom of the drive, while you slowly pull the drive straight out. See Figure 3-5.
Do not allow the drive to fall and strike anything while removing it.
5. Place the drive in an electrostatic protected container.
Do not stack drives while outside of the Netserver chassis.

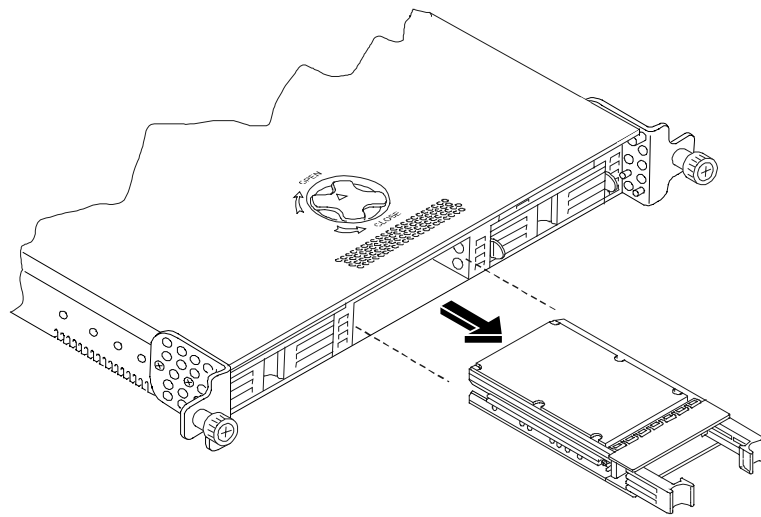


Figure 3-5. Removing a Hot Swap Drive

CAUTION

To prevent overheating or excessive electromagnetic radiation, use the filler panels to fill the unused drive bays. If the filler panels are left out of empty drive bays while the Netserver is operating, thermal damage and/or excessive EMI could occur.

Optional SCSI Drive Controller

Typically, this option is only used when hardware mirroring the Hot Swap SCSI drives. To change control of the SCSI drives requires installation of a supported HP NetRAID controller board and moving the connection of the existing SCSI cable. One end is moved from the SCSI A cable connection on the system board to the SCSI connector on the supported HP NetRAID Controller board.

1. Refer to Chapter 5, "Installing Additional Boards," to access the Netserver.

CAUTION

Don't disconnect the SCSI cable on the SCSI backplane board. This cable end remains connected while moving the other end of the cable at the SCSI A connector on the system board.

2. Disconnect the SCSI cable end connected to the SCSI A cable connection on the system board. See Figures 3-6 and 3-7.
3. Unfold the cable and connect it to the SCSI connector on the HP NetRAID Controller board before installing the board into the Netserver.

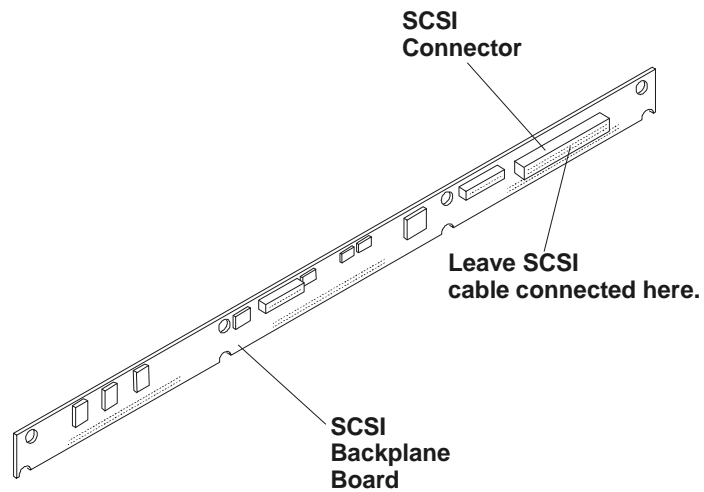


Figure 3-6. SCSI Backplane Board

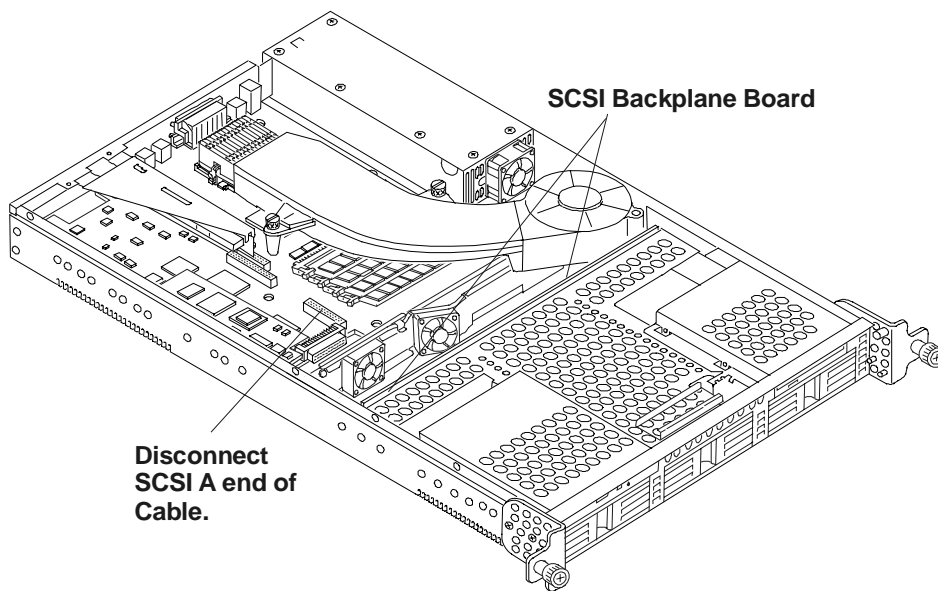


Figure 3-7. Disconnecting SCSI A Cable

4 Installing Additional Memory

Introduction

The HP Netserver LP 1000r's main memory is implemented using four memory slots on the system board and it supports up to 4 GB (1 GB x 4) of memory. The Netserver uses only 3.3V, 168-pin, 133 MHz, buffered, SDRAM DIMMs and ships with at least one 256 MB DIMM. The embedded video controller is provided with 4 MB standard video memory and cannot be upgraded.

NOTE	Use only PC 133 (133 MHz) SDRAM DIMMs acquired from Hewlett-Packard. The EDO DIMMs and PC 100 SDRAM DIMMs from earlier HP Netserver models will fit into the DIMM slots in the Netserver, but the EDO DIMMs and PC 100 SDRAM will not function properly.
-------------	--

To ensure you have the correct DIMMs before installation, refer to one of the following for a list of qualified DIMMs:

- HP Order Assistant on the HP web site at:

`http://www.hp.com/netserver`

- HP Customer Service

Tools Required

The following tools are required to remove or replace the DIMMs on the system board of the HP Netserver.

- 1/4-inch flat blade screw driver (may be needed for the air duct when it is removed for the first time)
- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Memory Installation Guidelines

- The HP Netserver LP 1000r only uses 133 MHz (PC133) buffered SDRAM DIMMs, which are electrically different from the EDO and PC100 SDRAM memory modules used in other HP Netserver models.
- DIMMs sizes supported are 128 MB, 256 MB, 512 MB, or 1 GB in any combination.
- Supported memory capacity ranges from 128 MB to 4 GB maximum (1 GB in each of the 4 DIMM slots). The minimum capacity is 128 MB (one DIMM).
- DIMM sizes may be mixed on the system board and may be loaded in any order (0 through 3).

However, HP recommends starting at slot 0 and filling the slots in order with the largest size first: 0, 1, 2, and 3.

- Open slots between DIMMs are permitted.
- When handling DIMMs, observe anti-static precautions to avoid damage.

Installing Additional DIMMs

1. If the system is already installed and working, power down the system.
Refer to Chapter 1, "Controls, Ports, and Indicators."
2. Disconnect the power cables and any external cables connected to the system.

If necessary, label each one to expedite re-assembly.

WARNING	The power supply will continue to provide standby current to the Netserver LP 1000r until the power cable is disconnected.
----------------	--

3. Remove the Netserver chassis from the rack and lay it on a flat surface.
Refer to Chapters 7, 8, or 13 (depending on rack type) for instructions.
4. Remove the top cover.
Refer to Chapter 2, "Opening and Closing the HP Netserver."

NOTE You do not need to remove the system board from the Netserver chassis to install or replace DIMMs.

5. Locate the DIMM slots on the system board. See Figures 4-1 and 4-2.
6. Loosen the two captive screws holding the air duct over the DIMM slots, and remove the air duct. See Figure 4-1.

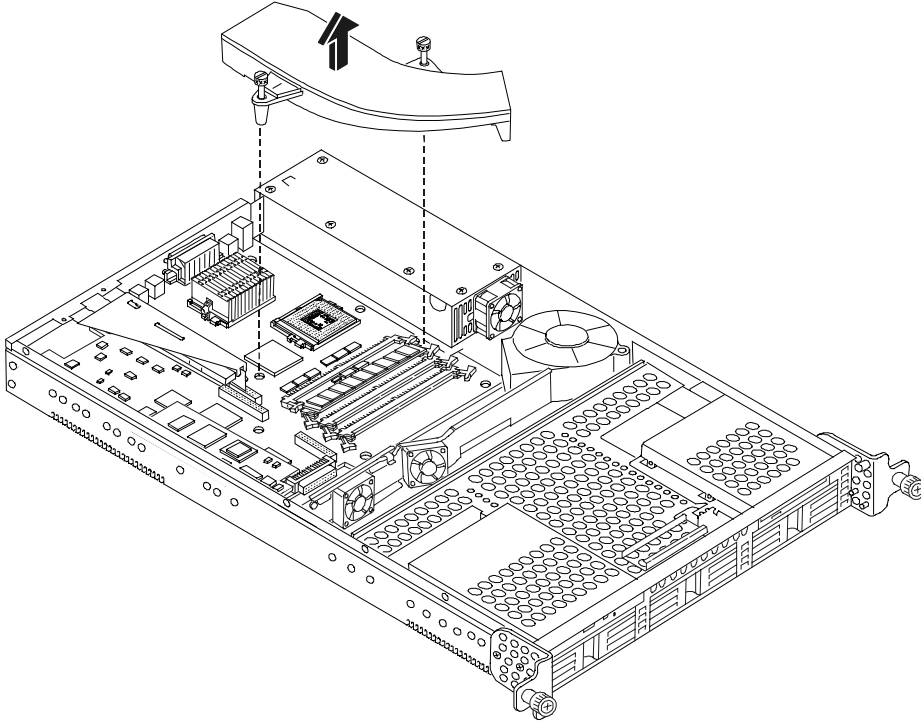


Figure 4-1. Removing the Air Duct

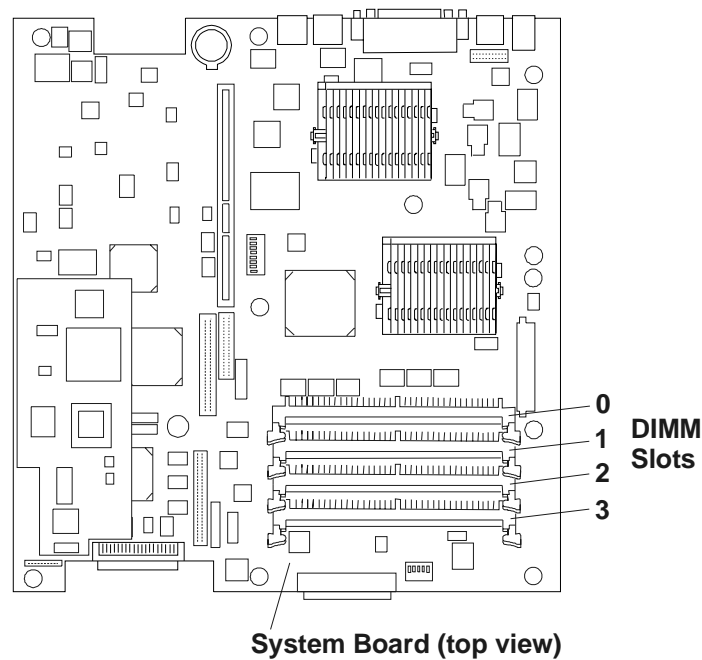


Figure 4-2. DIMM Locations on System Board

7. Choose an empty slot on the system board to install a DIMM.

DIMMs may be installed in any combination, in any slot, but HP recommends starting at slot 0 and filling the slots in order with the largest size first: DIMM slots 0, 1, 2, and 3.

8. Spread the two retaining latches on the slot outward. See Figure 4-3.

CAUTION

The memory modules are sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the accessory kit:

- Leave the memory module in the anti-static container until you are ready to install it.
- Always use an anti-static wrist strap and a grounding mat.
- Before you remove a memory module from the anti-static container, touch a grounded, unpainted metal surface on the HP Netserver to discharge static electricity.

9. Remove a DIMM from its container, handling the module by its edges.

If not ready to install it, lay it on an anti-static surface until you are ready.

CAUTION	Use only HP PC133 (133 MHz) buffered SDRAM DIMMs.
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10. Align the notches on the DIMM with the keys on the slot. See Figure 4-3.

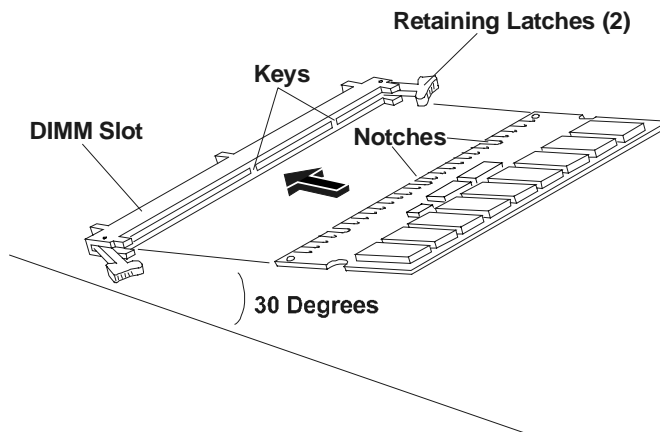


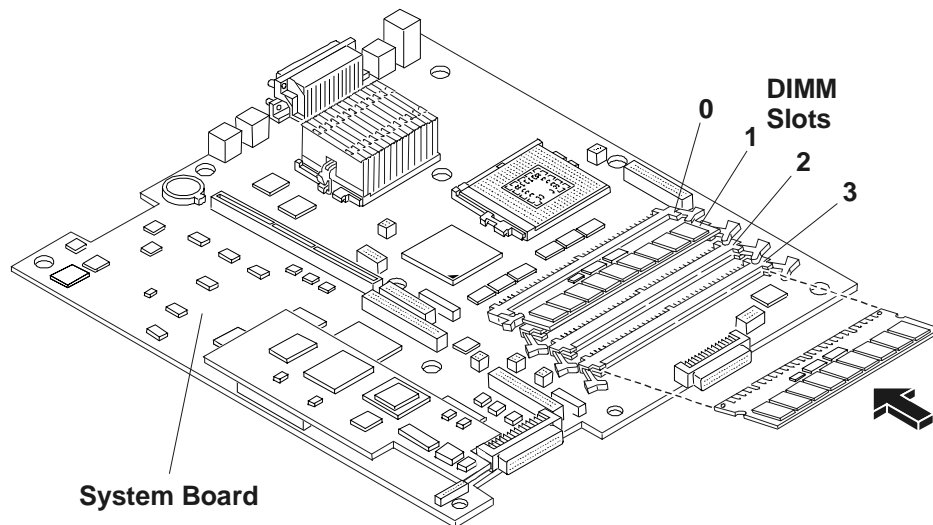
Figure 4-3. DIMM to Slot Alignment

WARNING	Ensure you hold the DIMM tightly as you push it into the slot. It is possible to turn or bend the DIMM slightly while inserting it, which would damage or break the DIMM socket. If a DIMM socket is damaged, you must use another DIMM slot or replace the entire HP Netserver, since this Netserver is not repairable in the field.
----------------	--

11. Holding the DIMM at approximately 30° to the system board, press the DIMM fully into the slot until the retaining latches close. See Figure 4-4.

If the latches do not close, the DIMM is not inserted correctly.

NOTE	The system board is shown removed from the Netserver for clarity.
-------------	---

**Figure 4-4. DIMM Insertion**

12. Repeat Steps 7-11 to install all of the DIMMs for your memory configuration.
13. If you have completed the DIMM installation, close the Netserver and return it to the rack where power can be applied.

Removing DIMMs

You may need to remove a DIMM module to downsize your memory configuration or to replace a defective DIMM.

1. If the HP Netserver is already installed and working, power down the Netserver.

Refer to Chapter 1, "Controls, Ports, and Indicators."

2. Disconnect the power cables and all external cables.

If necessary, label each one to support re-assembly.

WARNING

The power supply will continue to provide standby current to the Netserver until the power cable is disconnected.

3. Remove the Netserver chassis from the rack and lay it on a flat surface.

Refer to the appropriate chapter (Chapters 7, 8, or 13) for instructions.

4. Remove the top cover.

Refer to Chapter 2, "Opening and Closing the HP Netserver."

NOTE	You do not need to remove the system board from the Netserver chassis to install or replace DIMMs.
-------------	--

5. Locate the DIMM slots on the system board. See Figures 4-1 and 4-2.
6. Loosen the two captive screws holding the air duct, which covers the DIMM slots, and remove the air duct. See Figure 4-1.
7. Open the retaining latches.
8. Lift the DIMM completely away from the slot.
9. Place the DIMM in its anti-static container.
10. Repeat Steps 6-9 for as many DIMMs as you need to remove.

NOTE	If there are no DIMMs installed when you power up the Netserver, you will not get a display on the monitor, but you will hear beep codes.
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5 Installing Additional Boards

Introduction

The HP Netserver LP 1000r provides one 64-bit PCI slot connected to a riser board on the system board, which will handle a full-length 32-bit or 64-bit PCI accessory board.

Tested PCI Boards

For a list of tested PCI boards, check for compatibility in Configuration Assistant on the Navigator CD-ROM or look for the Hardware Tested Products list for the HP Netserver LP 1000r under the Service and Support topic for the specific NOS used in the Netserver at HP's web site:

<http://www.hp.com/netserver/support/>

CAUTION

Some accessory board outputs may exceed U.S. National Electrical code (NFPA 70) Class 2 or limited power source limits and must use appropriate interconnecting cabling in accordance with the National Electrical Code.

NOTE

All Hewlett-Packard accessory boards comply with the U.S. National Electrical code (NFPA 70) Class 2.

Also refer to the Readme file and Configuration Advisor on your *HP Netserver Navigator CD-ROM*. Refer to Chapter 10, "Configuring the HP Netserver," for instructions.

Tools Required

The following tools are only needed when removing or adding an accessory board in the HP Netserver:

- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Accessory Board Installation Guidelines

The following sections provide the guidelines necessary to install a PCI accessory board into the HP Netserver LP 1000r.

IRQ Settings

The IRQ settings are automatically assigned and don't require user intervention. The HP Netserver uses the Plug-and-Play feature of the PCI board to correctly assign its resources automatically.

Boot Priority

The Netserver's boot priority (BIOS search order for a boot drive) should be considered when selecting a boot device. This is especially important if you are installing a board that requires an early number in the boot order.

The embedded SCSI controller consists of two channels, A and B. Channel A is used to control the internal Hot Swap SCSI drives. Channel B is used to control the external SCSI devices, including a backup tape drive. On each SCSI channel, the Netserver scans for a boot device starting at device ID 0 and works up from there.

By default the Netserver searches for boot devices in this order:

1. IDE CD-ROM drive
2. Flexible disk drive
3. SCSI A channel (Hot Swap SCSI HDD)
4. SCSI B channel (external SCSI devices)
5. PCI slot P1 (32- or 64-bit slot)
6. Network connection

Installing a Disk Array Controller Board

Adding a disk array controller board provides additional fault tolerance to your internal or external mass storage devices. HP recommends installing the HP NetRAID-1Si,-1M, or-2M controller board in the HP Netserver LP 1000r. When installing a disk array controller board, you may alter the Netserver's boot order to allow the Netserver to boot off one of the array's drives. This boot order can be changed under the Configuration menu of the Netserver's (BIOS) Setup Utility and in the SCSI Configuration Utility.

Remote Control Card

The HP Netserver LP 1000r supports the HP Remote Control (PCI) card, which makes use of the HP TopTools remote management software. The Remote Control card requires an I²C connection to the system board, which is provided by the I²C connector on the daughter board (Integrated Remote Assistant circuitry) installed onto the system board. See Figures 5-1 and 5-2.

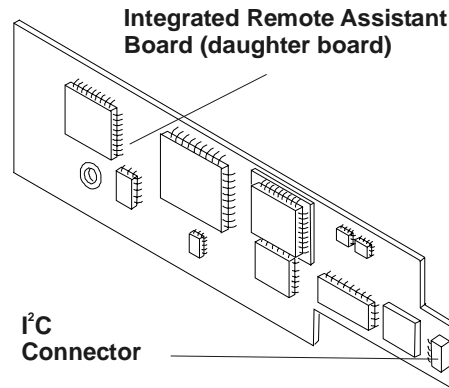


Figure 5-1. Integrated RA Board Connector (I²C)

NOTE

The daughter board has the circuitry for Integrated Remote Assistant (Integrated RA) and the I²C connector for connection to a Remote Control board. For more information on the use of the HP TopTools function, refer to Chapter 10, "Configuring the HP Netserver," and Chapter 11, "HP Netserver Online Documentation CD-ROM."

Installing the Accessory Board

Use this procedure to install the accessory board and observe the installation guidelines listed earlier.

1. If the Netserver is already installed and working, power down the Netserver.
Refer to Chapter 1, "Controls, Ports, and Indicators."
2. Disconnect the power cable and any external cables connected to the Netserver.
If necessary, label each one to expedite re-assembly.

WARNING	The power supply will continue to provide standby current to the Netserver until the power cable is disconnected.
----------------	---

3. Remove the Netserver from the rack.

Refer to Chapters 7, 8 or 13 (depending on rack type) to remove the Netserver from the rack.

If there is enough space above the Netserver in the rack, you may be able to install the accessory board from the rear of the Netserver while it is still in the rack.

4. Lay the Netserver on a flat surface and then remove the top cover.

Refer to Chapter 2, "Opening and Closing the HP Netserver."

CAUTION	Wear a wrist-strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure the metal of the wrist-strap contacts your skin.
----------------	---

5. Read the documentation included with the accessory board and follow any special instructions.

NOTE	Adding a PCI-to-PCI bridge board to the HP Netserver may alter the Netserver's boot order. This boot order can be changed using the Setup Utility (press [F2] during the boot process). Refer to "Boot Priority" earlier in this chapter.
-------------	---

6. Locate the riser board and its securing clamp in the Netserver.
See Figures 5-2 and 5-3.

NOTE	Refer to the Readme file, Tested Products List, or Configuration Advisor on your <i>HP Netserver Navigator CD-ROM</i> for helpful information about a particular PCI board type.
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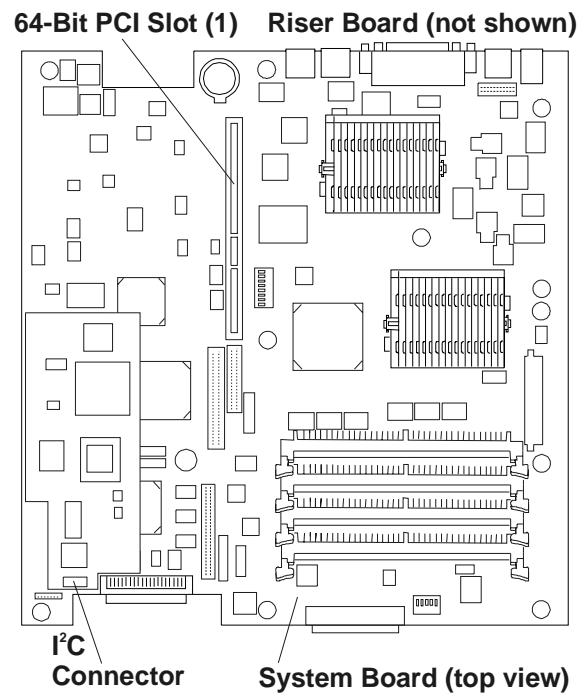


Figure 5-2. PCI Accessory Board Slot

NOTE

Refer to "System Board Layout" in the Appendix A, "Specifications," for connections not shown in Figure 5-2.

7. Lift and rotate the securing clamp up to about a 45° angle. See Figure 5-3.
The securing clamp holds the riser board in place and helps secure the PCI board.
8. Remove the securing clamp from the chassis and set it aside for re-assembly later.

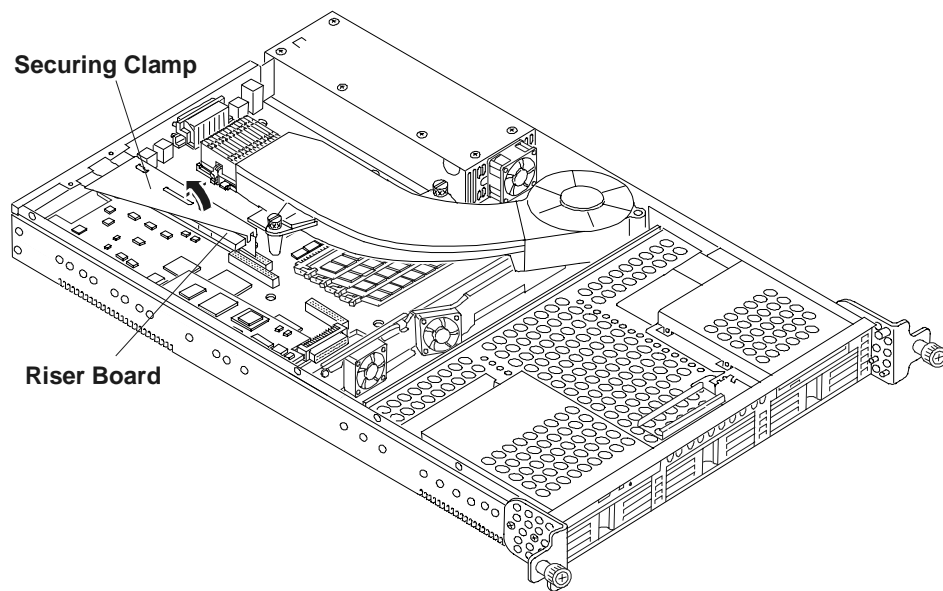


Figure 5-3. Riser Board and Securing Clamp

9. Lift up the latch and move the slot cover to the left away from the tabs and out of the chassis as shown in Figure 5-4.

The PCI slot cover is held in place by the latch and must be saved for use later.

NOTE

Save the slot cover for use later if the PCI board is removed. The slot cover must be installed in the empty PCI slot to prevent EMI interference.

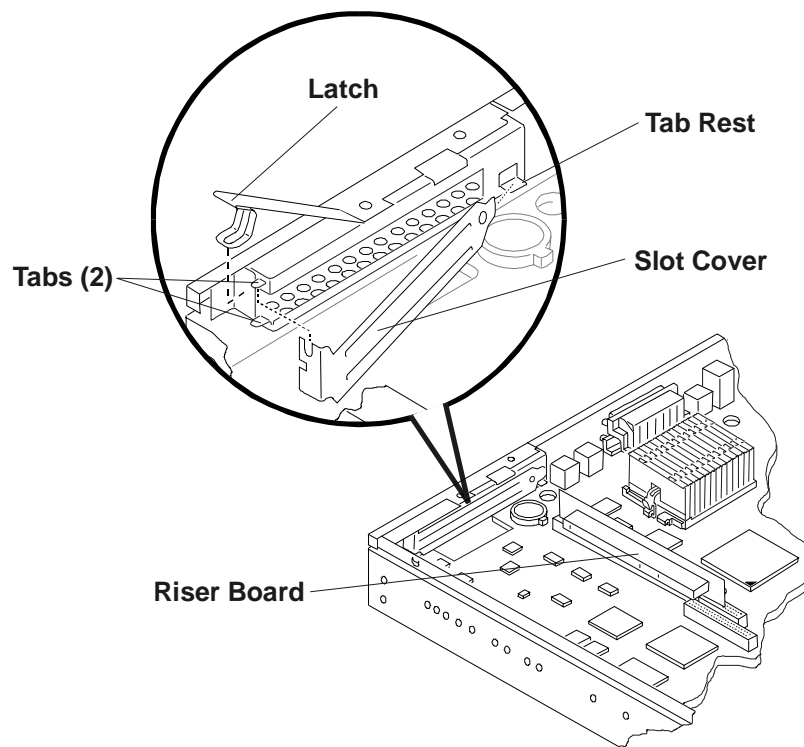


Figure 5-4. Removing the Accessory Slot Cover

10. If necessary, remove the riser board from the PCI slot.

You may leave the riser board in place with smaller PCI boards, but you will need to remove the riser board from the PCI slot for larger PCI boards.

11. Slide the accessory board into the PCI slot on the riser board as shown in Figure 5-5.

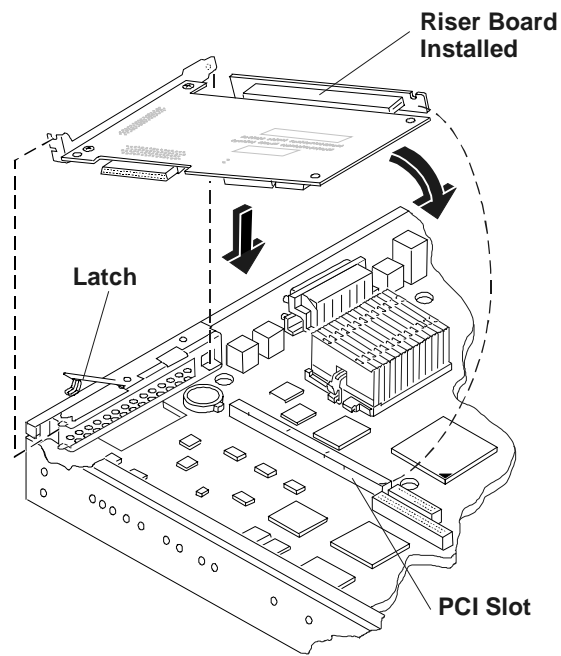


Figure 5-5. Inserting PCI Board-Riser Board

12. Insert the PCI board and riser board into the PCI connector on the system board. See Figure 5-5.
13. Secure the PCI board into the slot opening between the two tabs and close the latch. See Figures 5-4 and 5-5.
14. If you have a longer PCI board, you must use the board clamp to install the board into the Netserver. See Figure 5-6.
 - a. Raise the board clamp before installing the PCI board. See Figure 5-6.
 - b. Install the PCI board into the Netserver, securing the PCI board into the slot opening between the two tabs. See Figures 5-4 and 5-5.
 - c. Lower the PCI board onto the tab rests. See Figure 5-6.
 - d. Close the latch and then close the board clamp onto the edge of the PCI board. See Figure 5-6.
15. When you have completed the PCI aboard installation, close the Netserver and return it to the rack where power can be applied.

16. Once the Netserver is returned to normal operation, you may need to install software drivers.

The drivers for the new PCI board are either part of your existing system software or included on a flexible diskette or CD-ROM provided with the accessory board.

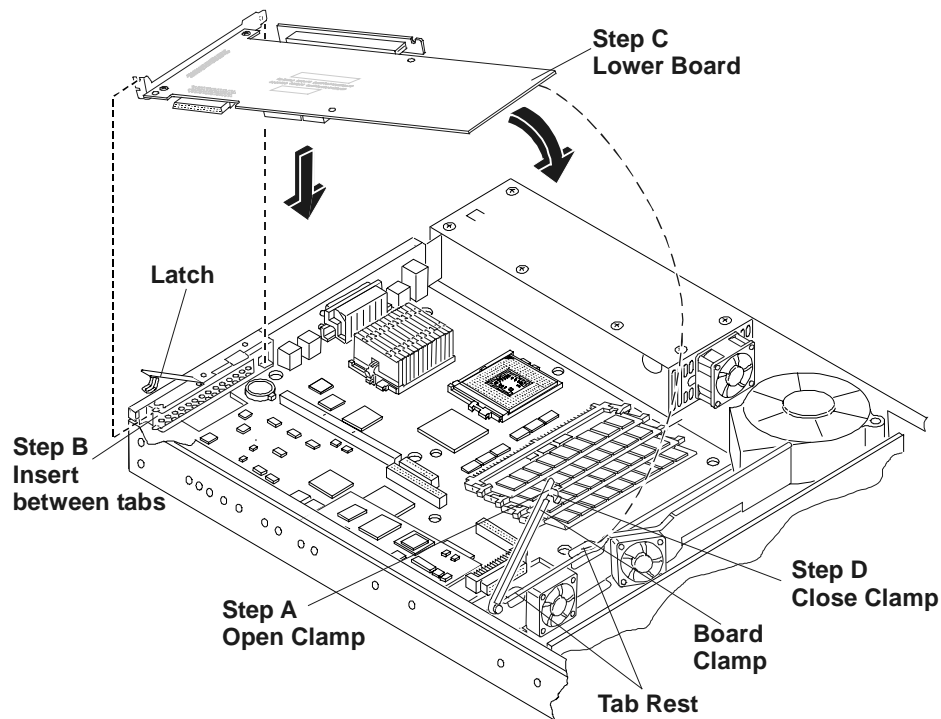


Figure 5-6. Clamping Long PCI Boards

Removing the Accessory Board

Follow the same steps as the installation procedure, but in reverse order. Replace the slot cover. See the preceding sections for details.

6 Installing an Additional Processor

Introduction

The HP Netserver LP 1000r ships with at least one processor on the system board (primary processor socket – CPU 1) and the voltage regulator modules (VRMs) are embedded in the system board. Both processor sockets (primary and secondary) are located on the system board.

Tools Required

The following tools are required to access and install or remove the processors:

- ¼-inch flat blade screwdriver
- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Processor Configuration Guidelines

The HP Netserver LP 1000r supports a variety of processor speeds with an FSB (front side bus) speed of 133 MHz. The Netserver supports processor speeds at 866, 933 MHz and 1 GHz.

NOTE

Some processor speeds listed for this HP Netserver may not be supported. For the latest support information, visit the HP web site:

<http://www.hp.com/netserver>

CAUTION

Do not open the new processor's protective bag or remove the processor from the bag until you are ready to install it.

Before you remove a processor from the anti-static bag, touch a grounded, unpainted metal surface on the HP Netserver to discharge static electricity.

- Both processors must be the same processor type and have the same product number, which insures the same clock speed, cache size, and FSB speed.

- The processors must operate at the designated speed stated by the product type on the processor.
- Use only processor upgrade kits with the same HP product number.
This ensures the processor type, clock speed, and cache size are the same.
- Ensure a processor is installed in the primary processor (CPU 1) socket before installing a processor in the secondary socket (CPU 2).

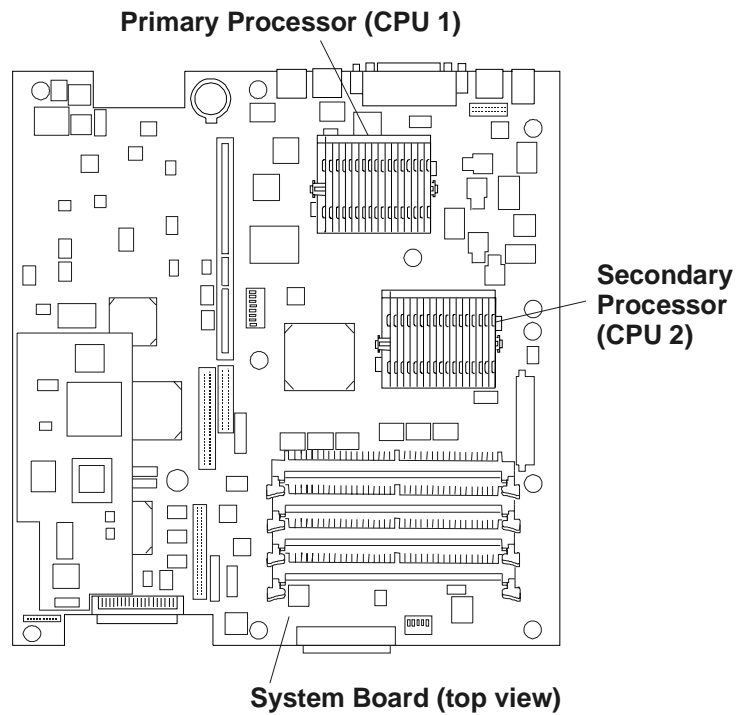


Figure 6-1. System Board

Installing a Second Processor

This section provides the instructions for installing a second processor and its accompanying heatsink on the system board.

CAUTION

The processor is sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the accessory kit:

- Leave the processor in the anti-static bag until you are ready to install it.
- Wear an anti-static wrist strap and use a static-dissipating work surface or grounding mat connected to the chassis when handling components.
- Before you remove a processor from the anti-static bag, touch a grounded, unpainted metal surface on the HP Netserver LP 1000r to discharge static electricity.

1. Unpack the processor shipping box and check the contents against its packing list.

CAUTION

Do not remove the processor from its bag and ensure the bag remains sealed until you are ready to install it.

2. If the Netserver is already installed and operating, shut down the NOS according to directions in your NOS documentation.
3. Press the power switch on the HP Netserver's control panel when prompted by the operating system.

Normally, this completes the shutdown procedure.

WARNING

Power supplies will continue to provide standby current to the Netserver until the power cables are disconnected.

4. Disconnect the AC power cord.
5. Gain access to the system board by following the appropriate instructions for removing the chassis from the rack and removing the cover.

Refer to Chapter 2, "Opening and Closing the HP Netserver," to gain access to the system board.

NOTE

It is not necessary to remove the system board from the Netserver to install the second processor (CPU 2).

6. Loosen the two captive screws holding the air duct over the DIMM slots and remove the air duct. See Figure 6-2.

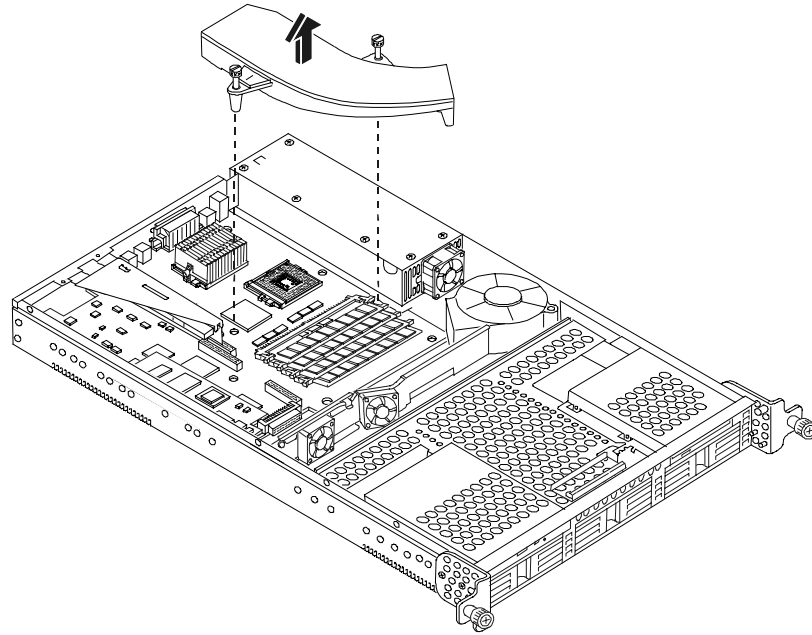


Figure 6-2. Removing the Air duct

7. Ensure the processor speed of the second processor (CPU 2) is the same as the existing processor before installing the second processor.

NOTE

If you are upgrading the second processor to a faster processor speed than the primary processor, the primary processor must also be changed. Both processors must have the same product number, which includes the same clock speed, cache size, and FSB speed.

The supported processors only perform at the rated speed indicated on the processor in the HP Netserver.

CAUTION Always wear a wrist-strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure the metal of the wrist strap contacts your skin.

8. Open the ZIF (Zero Insertion Force) lever to allow removal of the terminator installed in the processor socket. See Figure 6-3.

You need to pull the lever away from the ZIF socket and then raise it to a full 90° to the system board.

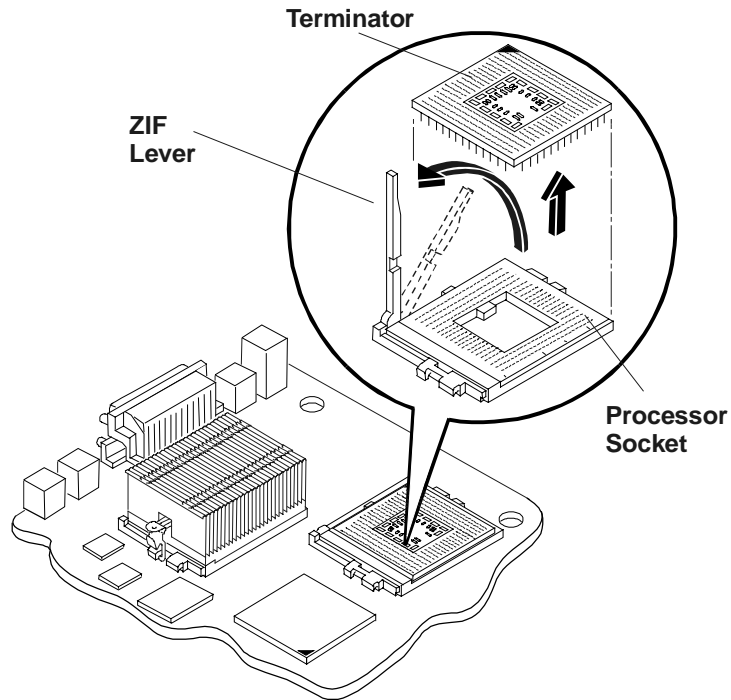


Figure 6-3. Removing the Terminator

NOTE Retain the terminator for future use. The Netserver will not operate properly if using only one processor with no terminator installed in the second processor socket.

9. Lift the terminator out of the socket and place it on anti-static surface or bag.

10. Align the second processor over the empty processor socket.

The socket has a triangle marking for pin-1 that should match the triangle for pin-1 on the processor near the end of the ZIF lever. See Figure 6-4.

CAUTION

Ensure you align pin-1 of the processor with pin-1 of the processor socket or pin damage will occur.

11. Insert the second processor into the socket and close the ZIF lever to fully seat the processor.

You should hear the ZIF lever click when it closes properly.

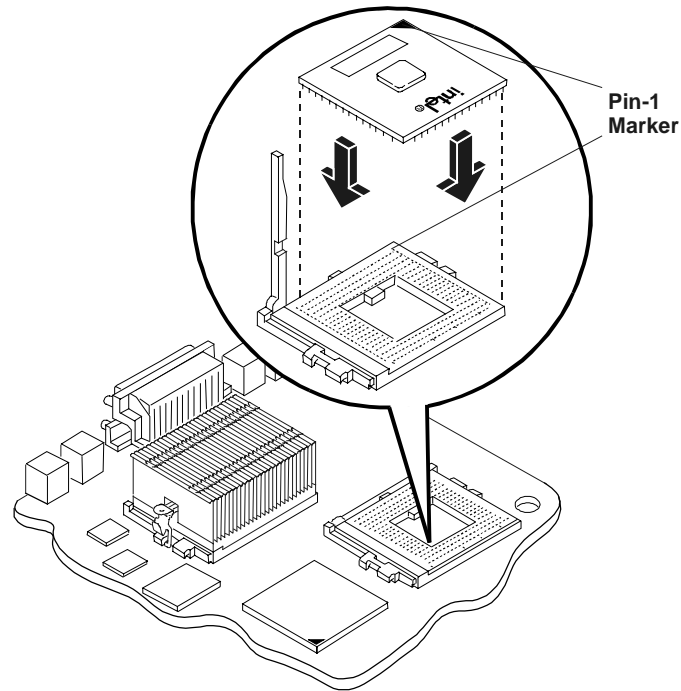


Figure 6-4. Installing the Processor on the System Board

NOTE	No speed switch settings are required for the supported processors (866, 933 MHz, or 1 GHz) in the HP Netserver. These processors rely on the internal settings within the processors and do not rely on external switch settings on the system board.
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Installing the Heatsink

Once the processor is installed, the heatsink must be installed on top of the processor. Each processor requires a heatsink and a thermal bonding between the processor and the heatsink, provided by the thermal patch. The heatsink is mechanically connected to the processor socket with both latches, mechanically making contact with processor.

1. Remove the heatsink from the shipping container and ensure you do not touch the thermal patch on the bottom of the heatsink.

CAUTION	Ensure you have a good thermal patch for good contact with the processor to avoid thermal overheating. If you have not made good contact on the processor, it may shutdown to prevent overheating. The supported processors have thermal sensors inside the processor chip to prevent overheating. If the processor runs hot, it may operate intermittently or crash the system causing data loss or file corruption. This may also lead to processor damage. Refer to the indicators in Chapter 1, "Controls, Ports, and Indicators."
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2. Inspect the thermal patch to ensure the thermal material covers the whole patch.
 - ◇ If not, you must remove the old patch and replace it with a new thermal patch. The heatsink kit should contain extra thermal patches. The thermal patch is peeled off the backing and placed in the center of the heatsink in the area marked.
 - ◇ If you are re-installing a heatsink on to the processor, you may need to scrap off any thermal material left on top of the processor chip. You can use your fingernail to scrap off the material, but ensure you are grounded with a static-dissipating wrist-strap.

NOTE

The heatsinks are not reusable unless the thermal patch has been replaced each time the heatsink is removed, even if the heatsink is just temporarily removed from a processor and then re-installed on the same processor.

Each time the heatsink is moved (slide) on the processor, some of the thermal material is removed from the thermal patch, which could cause poor heat transfer and overheating.

3. Ensure the latches are free and pointing away from the heatsink.
4. Install the heatsink onto the processor in the following manner:

CAUTION

To prevent scratching off some of the thermal material, don't slide the heatsink around once it is on the processor. Rocking it slightly to install both sides of the latch is acceptable.

- a. Position the heatsink over the processor socket and lower it squarely onto the processor, as shown in Figures 6-5 and 6-6.

The heatsink can only be installed in one direction, with the metal step to the left of processor socket, as shown in Figures 6-5 and 6-6.

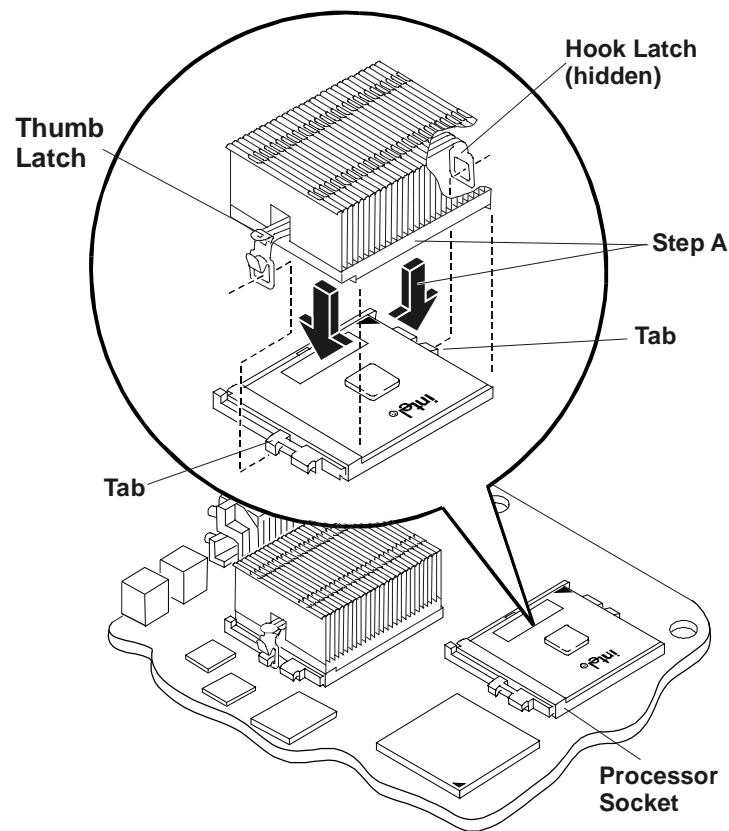


Figure 6-5. Placing the Heatsink on the Processor

CAUTION

Ensure the left ridge on the bottom of the heatsink fits into the groove between the processor socket and processor, while both ridges should straddle the processor. If good contact is not made between the processor and the heatsink, the processor will overheat and possible damage may occur. See Figures 6-5 and 6-6.

- b. While holding the heatsink steady with one hand, push down and in toward the center with your finger to hook the tab with the hook latch. See Figure 6-6.
- c. While holding the heatsink down with one hand, push down with your thumb to hook the tab with the thumb latch. See Figure 6-6.

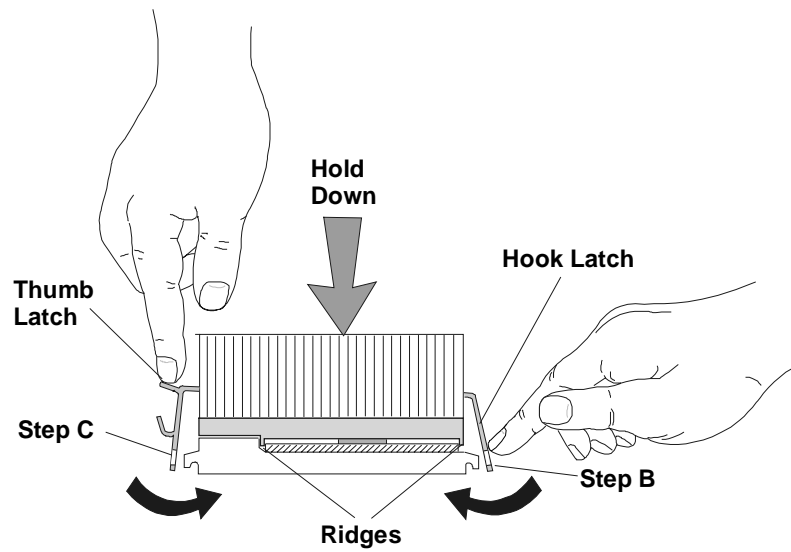


Figure 6-6. Setting the Latches

CAUTION

Failure to re-install the air duct will cause the Netserver to shut down with no messages displayed and possible damage to the processor.

5. Replace the air duct on the system board and tighten the captive screws.
See Figure 6-7.

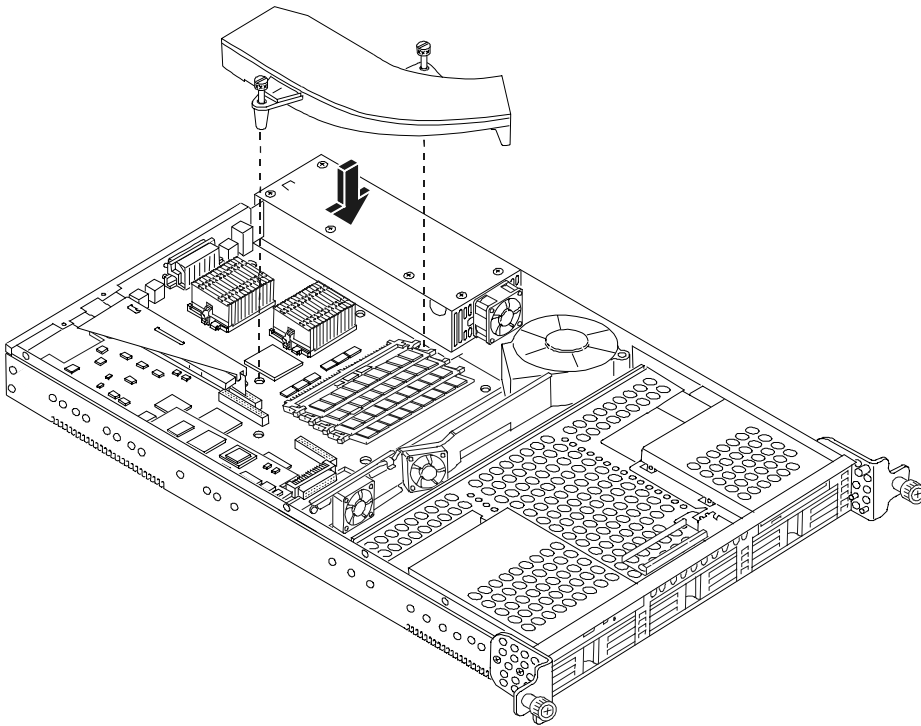


Figure 6-7. Replacing the Air Duct

Firmware and Software Changes

This section describes the firmware changes provided by the *HP Netserver Navigator CD-ROM* and the possible need to reinstall the NOS to recognize the second processor.

Upgrading the Firmware

If your processor included a new *HP Netserver Navigator CD-ROM*, insert the CD into the HP Netserver LP 1000r CD-ROM drive and power on the Netserver. Follow the instructions provided on screen to ensure the system BIOS is up-to-date. The system BIOS on the CD will be compared to the Netserver's current BIOS and will indicate if the BIOS needs to be updated. Refer to Chapter 10, "Configuring the HP Netserver," for more information.

Reinstalling the NOS

You may have to reconfigure or reinstall your NOS in order to use the additional processor. If you have gone from a uni-processor to dual-processor configuration, check your NOS documentation, or the Readme file and Configuration Advisor utilities on the *HP Netserver Navigator CD-ROM*.

Removing a Processor and Heatsink

Use this procedure to remove a processor and its heatsink. The heatsink must be removed before removing the processor.

CAUTION

Always wear a wrist-strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure the metal of the wrist strap contacts your skin.

Before you touch the processor to remove it, touch a grounded unpainted metal surface on the HP Netserver to discharge static electricity.

1. Loosen the two captive screws holding the air duct over the DIMM slots and remove the air duct. See Figure 6-2.
2. Use a screwdriver or similar tool to unhook the tool latch on the heatsink. See Figure 6-8.
3. Tilt the heatsink back towards the hook latch and release the hook latch. See Figures 6-5 and 6-6.
4. Lift the heatsink away from the processor and out of the Netserver.
5. Open the ZIF lever to allow removal of the processor. See Figure 6-4.
6. Grasp the processor by its edges and lift it out of the socket and place it on a static-dissipating work surface or into an anti-static bag.
7. If you are not replacing the processor with a new or replacement processor, you must install the terminator into the empty processor socket. See Figure 6-3.

CAUTION

The empty processor socket must have a terminator installed if you are not installing a processor into the empty socket.

8. If you intend to use the heatsink again for a new or replacement processor, you must insert a new thermal patch on the bottom of the heatsink.

Refer to the heatsink installation procedure earlier in this chapter.

CAUTION

To prevent damage to the replacement processor, remove the old patch and install a new thermal patch to the bottom of the heatsink before installing it on the new processor.

The heatsinks are not reusable unless the thermal patch has been replaced each time the heatsink is removed. Each time the heatsink is used on the processor, some of the thermal material is removed from the thermal patch, which could cause poor heat transfer and overheating.

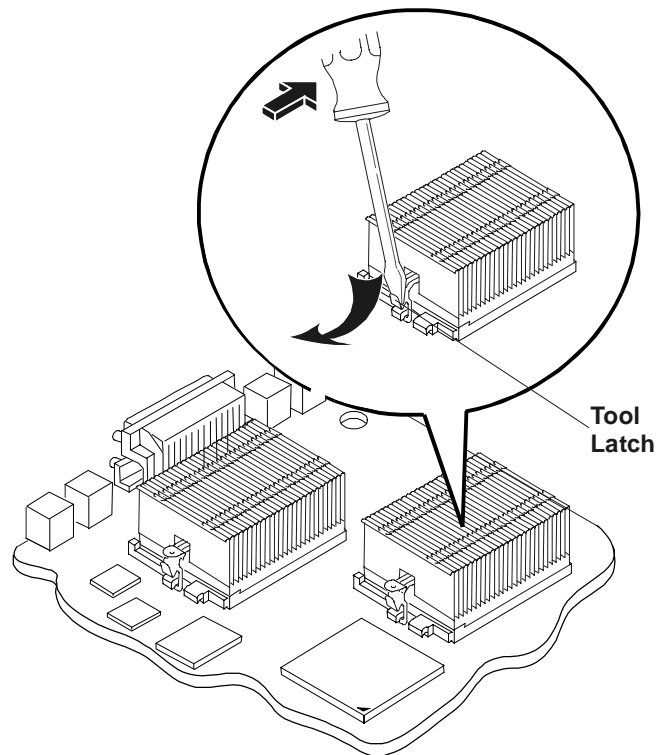
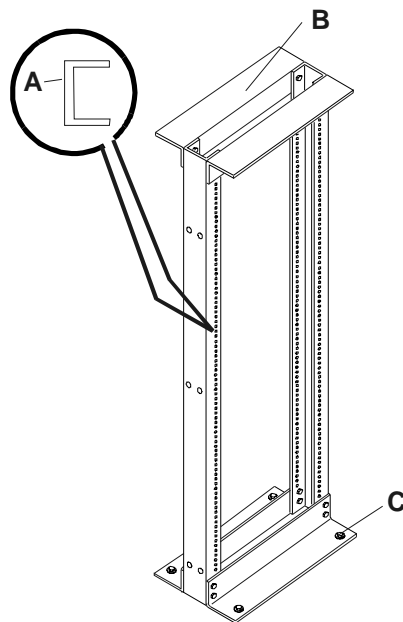


Figure 6-8. Removing the Heatsink

7 Rack Mounting the HP Netserver (2-Post)

Introduction

This chapter provides the instructions for mounting the HP Netserver in a two-post (column) non-HP rack. The illustration below shows the characteristics of the 2-post (CPI – Chatsworth Products Inc.) rack. If you have one of the four-post HP racks, see Chapter 8, "Rack Mounting the HP Netserver (4-post)," or Chapter 13, "Alternative Rack Mounting (4-post)," for instructions. If you are mounting the Netserver in a non-HP rack, refer to the documentation in the appropriate rack accessory kit.



Characteristics of 2-Post Rack:

- A. U-shaped column for easy access
- B. Top is secured to ceiling to hold additional weight.
- C. Base is bolted to floor.

Figure 7-1. Features of 2-Post Rack

NOTE

If you want to mount your Netserver in a third-party rack not mentioned in this guide, you may find relevant documentation on HP's web site at the following URL:

<http://www.hp.com/netserver/support>

Before mounting the Netserver, determine the Netserver's location in the rack relative to other rack components. The HP Netserver LP 1000r rack mounting kit only requires one EIA unit of space in the rack. Proper placement is vital both for safety and operating efficiency. For more information, refer to "Rack Configuration Tools" later in this chapter.

NOTE

If the HP Netserver is completely configured by the vendor before delivery to the customer, then mounting the HP Netserver in the rack may be the final step in the installation procedure. If the vendor configures the HP Netserver at the customer's site, installation of the network operating system and other software may occur after the HP Netserver is mounted in the rack.

WARNING

The HP Netserver weighs 32 lbs. (14.5 kg.) fully loaded. To prevent an accident, use two people when placing the Netserver into the rack.

CAUTION

If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.

Tools Required

To assemble the rack mount kit and install the HP Netserver on it, you need these tools.

- T-15 Torx Driver (Bracket mounting)
- Number 2 Phillips screwdriver (Rack mounting)
- Masking tape or marking pen

Rack Configuration Tools

HP rack configuration tools, including white papers, are available on the worldwide web. Enter the following URL in your browser:

`http://www.hp.com/netserver`

At the Web site, search for "configuration tools" and "high density rack solutions," specifically Rack Assistant, Rack Configuration, Order Assistant, and *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

You can read about the tools or download copies for installation. These tools can be used to plan a rack configuration for the components in your system.

The white papers, specifically *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*, provide rack information for HP Netservers in the high density racks and additional information for rack systems not listed in this manual. You will need this information to complete a rack system installation.

Safety Precautions

Always keep the following safety and environmental issues in mind, especially if you install the HP Netserver in a non-HP rack environment:

- **Optimum Operating Environment** - The optimum operating conditions for the HP Netserver is in an environmental controlled computer room with a temperature range of 20 to 22° C (68 to 72° F) at 40 to 60% relative humidity.
- **Maximum Ambient Temperature** - Ensure the maximum ambient temperature does not exceed 35° C (95° F).
- **Elevated Operating Ambient Temperature** - The ambient operating temperature within a multi-unit rack assembly is likely to exceed the room's ambient temperature. Ensure the temperature around the rack itself does not exceed 35° C (95° F).
- **Reduced Air Flow** - As you mount equipment in the rack, ensure you allow enough air flow for safe operation of the equipment. The Netserver's fans will only operate correctly if both front and rear of the rack allow free air flow.
- **Mechanical Loading** - Uneven mechanical loading within the rack can cause hazardous conditions. To prevent uneven loading plan to place the heaviest components in the bottom of the rack, mounting all components as low in the rack as possible.

- **Circuit Overloading** - Ensure the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** - Maintain reliable earth grounding of rack-mounted equipment. Give particular attention to supply connections that are not direct connections to the branch circuit (for example, using non-HP power strips).

Preparing the Rack

The hole placement on the two columns must be marked before attempting to mount the HP Netserver chassis. Once the two holes on both columns are marked correctly, the rails and hardware can be removed from the Netserver chassis and the new brackets can be mounted on the chassis. Once the brackets are installed the Netserver can be mounted onto the columns.

HP Netserver Rack Mount Parts List

Ensure the rack-mounting kit provided with the HP Netserver contains the following parts:

Table 7-1. Parts for Rack Mount Kit

Quantity	Description
2	Flush mount brackets (one left and one right side)
2	Center mount brackets (one left and one right side)
8	Bracket mounting screws (8-32 x ¼ inch, Torx head)
4	Rack mounting screws (12-24 Phillips head)

Marking the Rack

Use this section to mark the columns of the 2-post non-HP rack. The brackets attach to the front side of the two columns for either flush mount or center mount brackets. The masking tape (or marking pen) is used to identify and mark the locations on the columns.

CAUTION	If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.
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NOTE Use the *HP Rack Configuration Tools* to determine where in the rack to mount the HP Netserver. The tools are available at:
<http://www.hp.com/netserver/support>

1. Use the mounting brackets to help find the Netserver location on the columns, as shown in Figure 7-2.

The screw holes cover a span of only one EIA unit, which is the height requirement of the HP Netserver.

2. Use the masking tape (or marking pen) to mark above the 3rd hole up the on face of both front columns, as shown in Figure 7-2.

NOTE The brackets use the 1st and 3rd holes on the respective front columns, regardless of the mounting position of the Netserver.

The Netserver can only be mounted into both holes of one EIA Unit, but cannot be mounted across two EIA units. You cannot use a hole in one EIA unit and a hole in another EIA unit.

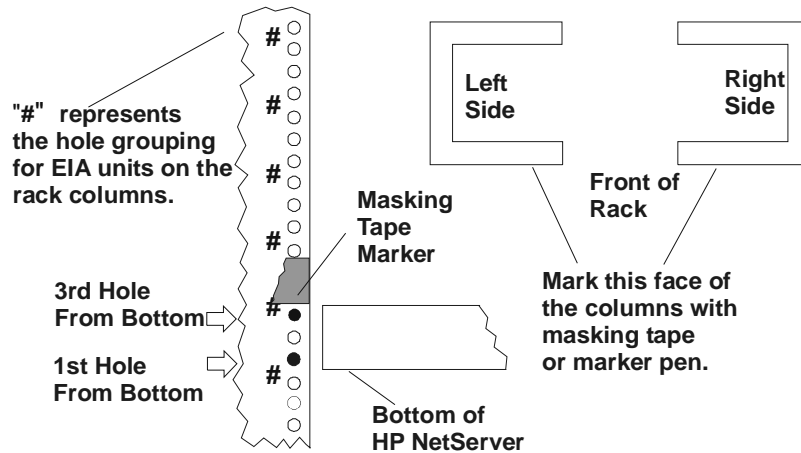


Figure 7-2. Locations on the Rack's Front Columns

Preparing the HP Netserver

Each HP Netserver has two inner-rails attached at the factory and shipped to customers. These two inner-rails must be removed to attach the brackets before the Netserver can be mounted in the rack.

1. Lay the HP Netserver on a flat surface.
2. Remove the front bezel on the Netserver chassis, if not already removed. See Figure 7-3.

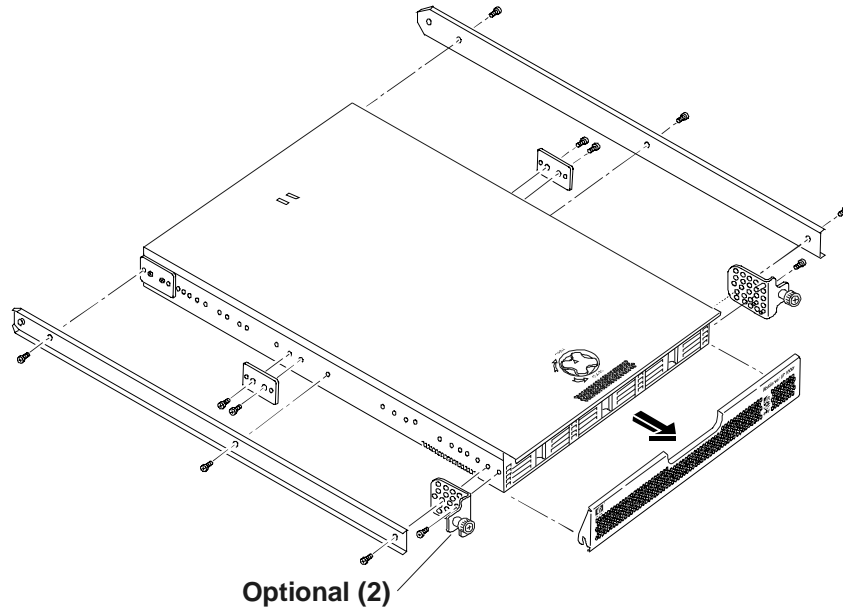


Figure 7-3. Removing Existing Hardware

3. Remove the screws holding the inner-rails and spacers on each side of the chassis. See Figure 7-3.
4. If mounting flush mount brackets, remove the screws holding the front mounting brackets to each side of the chassis. See Figure 7-3.
5. Locate the brackets in the kit.
 - ◊ If you are mounting the HP Netserver as a flush mount, you only need the two flush mount brackets mounted on the front of the chassis.
 - ◊ If you are mounting the HP Netserver as a center mount, you only need the flush mount brackets to mount to the Netserver chassis. Leave the

original front mounting brackets to provide a connection for the front bezel. See Figure 7-3.

6. Mount the two flush mount brackets on the Netserver chassis using the four screws provided for each one. See Figure 7-4.

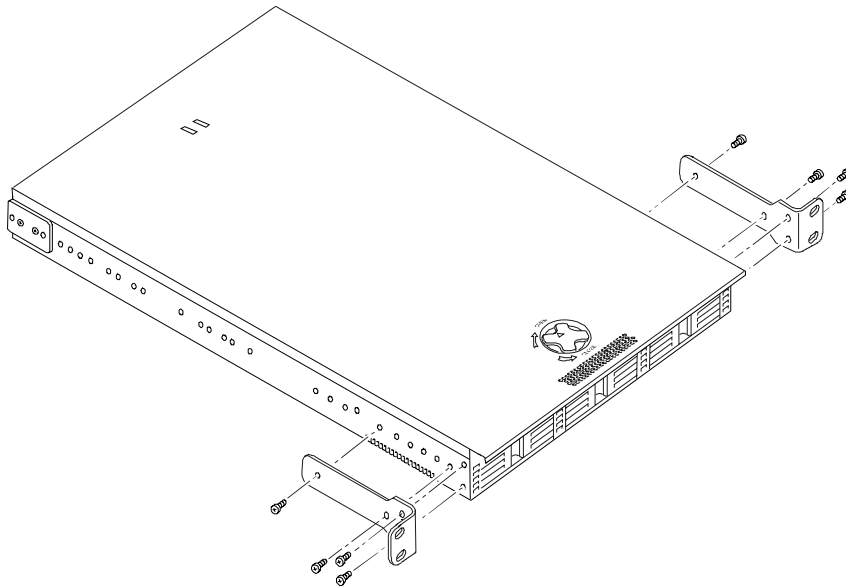


Figure 7-4. Mounting Flush Mount Brackets

7. If required, mount the center mount brackets on the Netserver chassis using the four screws provided for each one. See Figure 7-5.

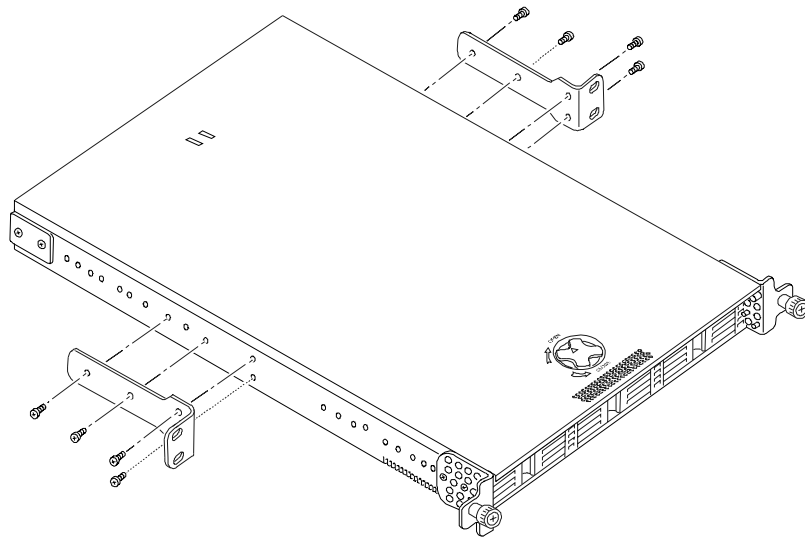


Figure 7-5. Mounting Center Mount Brackets

Placing the HP Netserver in the Rack

Use this procedure to position the HP Netserver into the rack and secure it in place. Once the Netserver is in the rack, you can connect the front bezel to the Netserver chassis.

WARNING	To prevent personal injury or damage to the equipment, use two people to mount the HP Netserver into the rack.
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1. With the help of at least one other person, lift the HP Netserver off the table or pallet.
2. Move the center of the Netserver beyond the face (or front) of the two columns. See Figure 7-6.

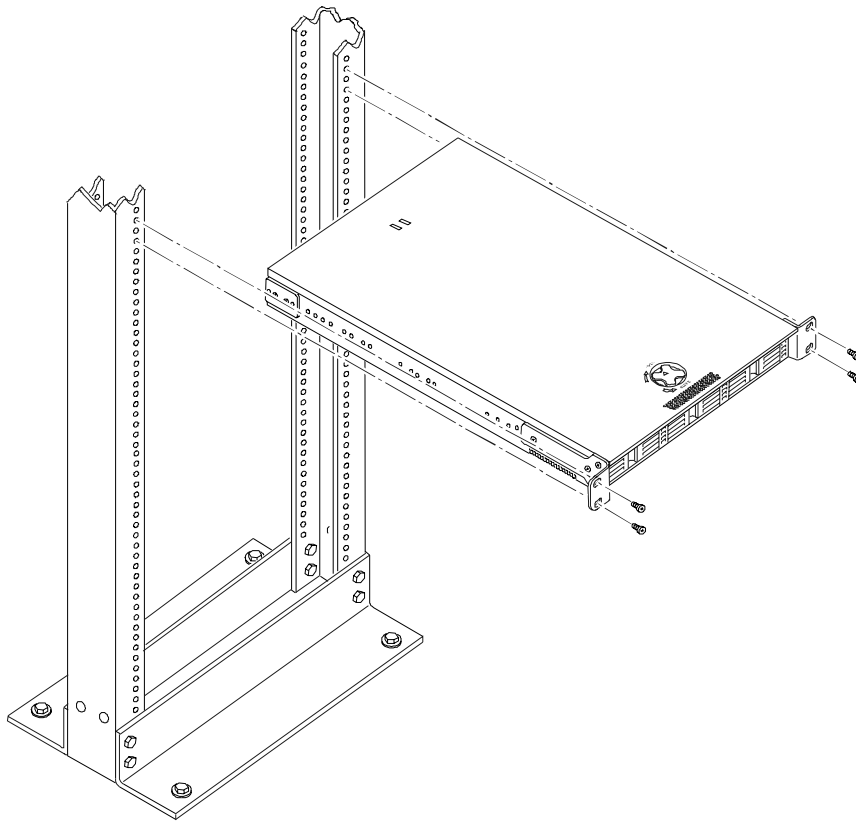


Figure 7-6. Flush Mounting in the Rack

3. Position the Netserver's two flush mount brackets over the holes (1st & 3rd) on the face of the two columns. See Figure 7-6.

The masking tape or marking pen (marker) should provide the location of the holes on the two columns. See Figure 7-2.

4. Insert one screw through each bracket into the column, preferably the top or 1st hole on the column below the marker.
5. Turn the two screws enough with the Torx driver to hold the Netserver in place, while you insert the two remaining screws.
6. If mounting the Netserver with the center mounts, follow Steps 1-5 for the center mount brackets. See Figure 7-7.

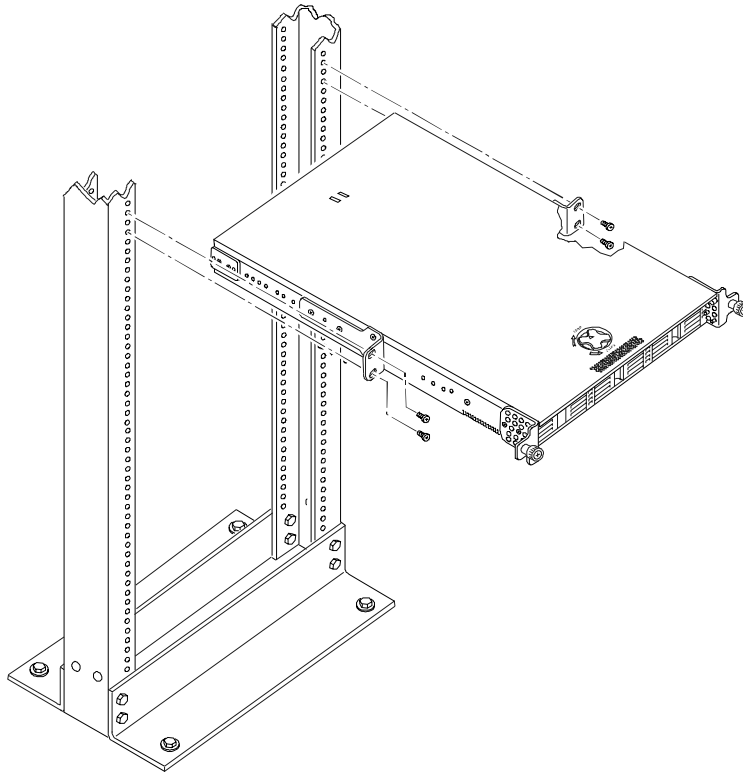


Figure 7-7. Center Mounting in the Rack

Attaching the Front Bezel

The front bezel attaches to the HP Netserver by pivoting on two pins at the bottom and holding onto the top pins with spring latches. The middle pins force the bezel to rotate in or out, ensuring a rotating action.

1. Position the Bezel in front of the HP Netserver LP 1000r as shown in Figure 7-8.
2. Push in on the bottom to engage the pins, allowing it to rotate up.
3. Push the bezel in at the top to engage the spring latches.

The spring latches should click when engaged.

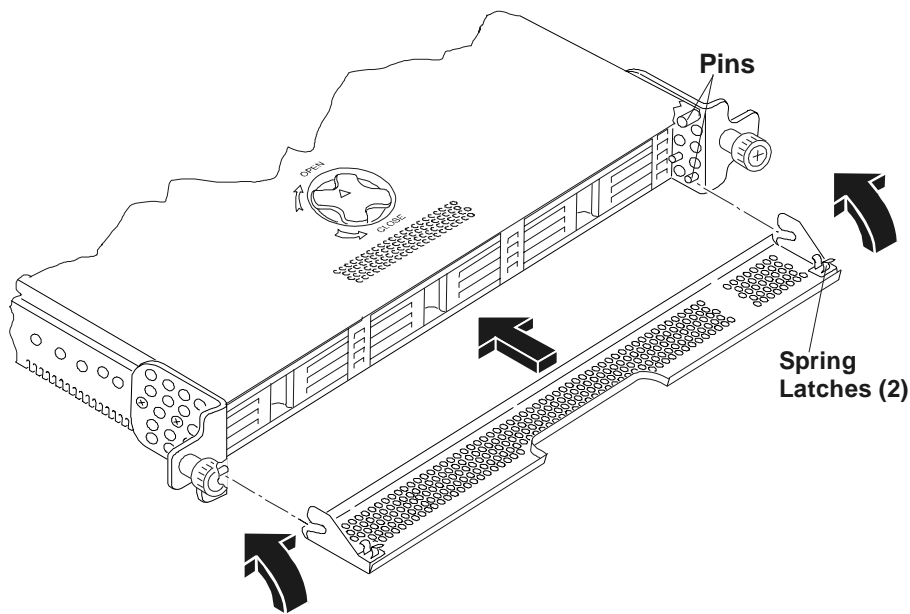


Figure 7-8. Installing the Bezel

Continuing with the Rack Installation Process

After you install the HP Netserver in the rack, refer to the white paper located on the HP web site for high-density rack configurations to continue with the process of installing and configuring the rack system. The white paper is titled *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

8 Rack Mounting the HP Netserver (4-Post)

Introduction

This chapter provides the instructions for mounting the HP Netserver in a 4-post (column) HP System/E or System/U rack. The illustration below shows the characteristics of the System/E and System/U racks. If you have the older HP Systems rack, see Chapter 13, "Alternative Rack Mounting (4-post)," for instructions. If you are mounting the Netserver in a 2-post non-HP rack, refer to Chapter 7, "Rack Mounting the HP Netserver (2-Post)," or see the documentation in the appropriate rack accessory kit.

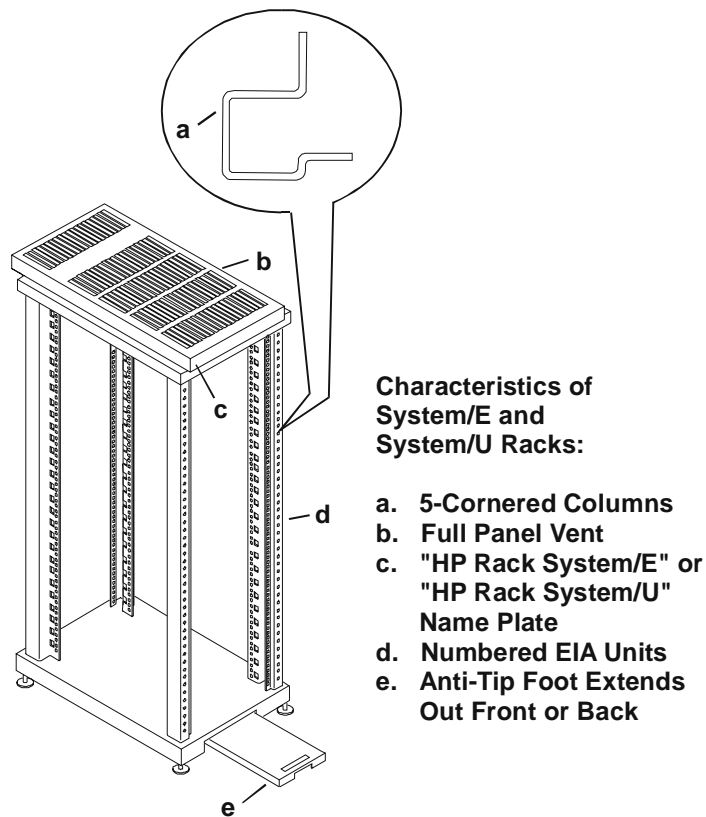


Figure 8-1. HP System/E and System/U Rack Features

NOTE

If you want to put your Netserver into a third-party rack not mentioned in this guide, you may find relevant documentation on HP's web site at the following URL:

<http://www.hp.com/netserver/support>

Before mounting the Netserver, plan the Netserver's location in the rack relative to other rack components. Proper placement is vital for safety and operating efficiency. For more information, refer to "Rack Configuration Tools" later in this chapter.

NOTE	If the HP Netserver is completely configured by the vendor before delivery to the customer, then mounting the HP Netserver in the rack may be the final step in the installation procedure.
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CAUTION	If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.
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Tools Required

This rack mounting kit is provided as a tool-less assembly, but does need a nut drive or wrench to release the spring mechanism after shipping.

- Nut driver (10-mm) or wrench (release spring mechanism after shipping)
- Masking tape or marking pen

Rack Configuration Tools

The HP rack configuration tools, including white papers, are available on the worldwide web at HP's web site.

Enter the following URL in your browser:

`http://www.hp.com/netserver`

At the Web site, search for "configuration tools" and "high density rack solutions", specifically Rack Assistant, Rack Configuration, Order Assistant, and *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

You can read about the tools or download copies for installation. These tools can be used to plan a rack configuration for the components in your system.

The white papers, specifically *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*, provide rack information for HP Netservers in the high density racks and additional information for rack systems not listed in this manual. You will need this information to complete a rack system installation.

Safety Precautions

Always keep the following safety and environmental issues in mind, especially if you install the HP Netserver in a non-HP rack environment:

- **Optimum Operating Environment** - The optimum operating conditions for the HP Netserver is in an environmental controlled computer room with a temperature range of 20 to 22° C (68 to 72° F) at 40 to 60% relative humidity.
- **Maximum Ambient Temperature** - Ensure the maximum ambient temperature does not exceed 35° C (95° F).
- **Elevated Operating Ambient Temperature** - The ambient operating temperature within a closed or multi-unit rack assembly is likely to exceed the room's ambient temperature. Ensure the temperature within the rack itself does not exceed 35° C (95° F).
- **Reduced Air Flow** - As you mount equipment in the rack, ensure you allow enough air flow for safe operation of the equipment. The Netserver's fans will only operate correctly if both front and rear doors of the rack allow free air flow (perforated openings), or are removed.
- **Mechanical Loading** - Uneven mechanical loading within the rack can cause hazardous conditions. To prevent uneven loading plan to place the heaviest components in the bottom of the rack, mounting all components as low in the rack as possible.
- **Circuit Overloading** - Ensure the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** - Maintain reliable earth grounding of rack-mounted equipment. Give particular attention to supply connections that are not direct connections to the branch circuit: for example, using non-HP power strips.

Preparing the Rack

The outer-rail assemblies must be released after shipment and the columns must be marked before mounting the outer-rail assemblies. Once the outer-rails are correctly mounted, then the HP Netserver LP 1000r can be installed into the rack. A template is not provided because the Netserver is exactly one EIA unit high and can only fit into one EIA unit, but not across two EIA units.

NOTE	The HP Netserver weighs 32 lbs. (14.5 kg.) fully loaded. It is not necessary to use two people when placing the Netserver into the rack, but it may be helpful.
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HP Netserver Rack Mount Parts List

Ensure the rack-mounting kit provided with the HP Netserver contains the following parts:

Table 8-1. Parts for Rack Mount Kit

Quantity	Description
2	Outer-rail assemblies

Releasing Outer-Rail Assemblies

This is only required the first time the outer-rail assemblies are shipped. The outer-rails are compressed for shipping and held in place with two 10-mm nuts. These nuts must be turned turn to release the spring assembly and then turned back to hold the spring assembly in place with freedom to move back and forth. See Figure 8-2.

1. Turn both nuts counterclockwise (CCW) $\frac{3}{4}$ of a turn to release the spring assembly.
2. Turn both nuts back clockwise (CW) $\frac{1}{4}$ of a turn to hold the spring assembly in place.

The spring assembly must be able to move freely back and forth to aid in installation of the outer-rails into the rack.

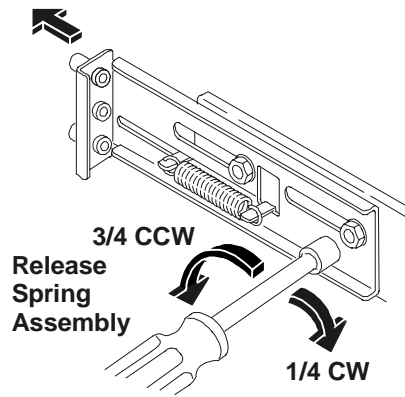


Figure 8-2. Releasing Spring Assembly

Marking the Columns

Use this section to mark the front and rear columns of the HP System/E or HP System/U rack. The outer-rails mount to the face of the front columns and the inside face of the rear columns. The masking tape (or marking pen) is used to identify and mark the locations on the columns.

CAUTION

If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.

NOTE

Use the *HP Rack Configuration Tools* to determine where in the rack to mount the HP Netserver. The tools are available at: <http://www.hp.com/netserver/support>

1. Find the EIA unit markings on the rack and the location for the Netserver.

The screw holes cover a span of only one EIA unit, which is the height requirement of the HP Netserver.

NOTE

The Netserver can only be mounted into both holes of one EIA Unit, but cannot be mounted across two EIA units. You cannot use a hole in one EIA unit and a hole in another EIA unit.

2. Use the masking tape (or marking pen) to mark above the 3rd hole up on both front columns, as shown in Figure 8-3.

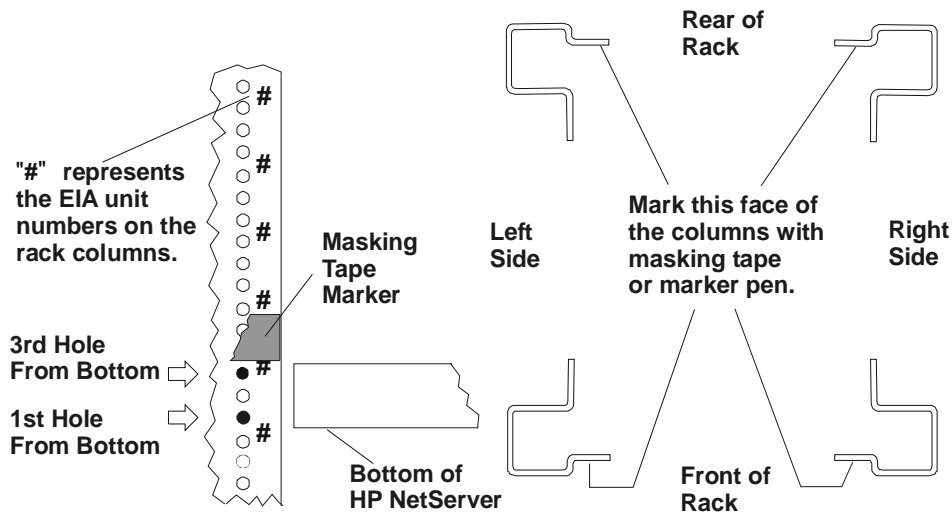


Figure 8-3. Location Marks on the Rack's Columns

3. Mark the inside face of the left-rear and right-rear rack columns as shown in Figure 8-3.

Attaching the Outer-Rail Assemblies

No tools are required to attach the outer-rail assemblies to the rack columns.

1. Pull the anti-tip foot forward out of the bottom of the rack.
See Figure 8-4 for the anti-tip foot location.
2. Lower the leveler screws on the rack's lower four corners to make firm contact with the floor. See Figure 8-4.
3. Align the left outer-rail to the left front and rear columns as shown in Figure 8-4.

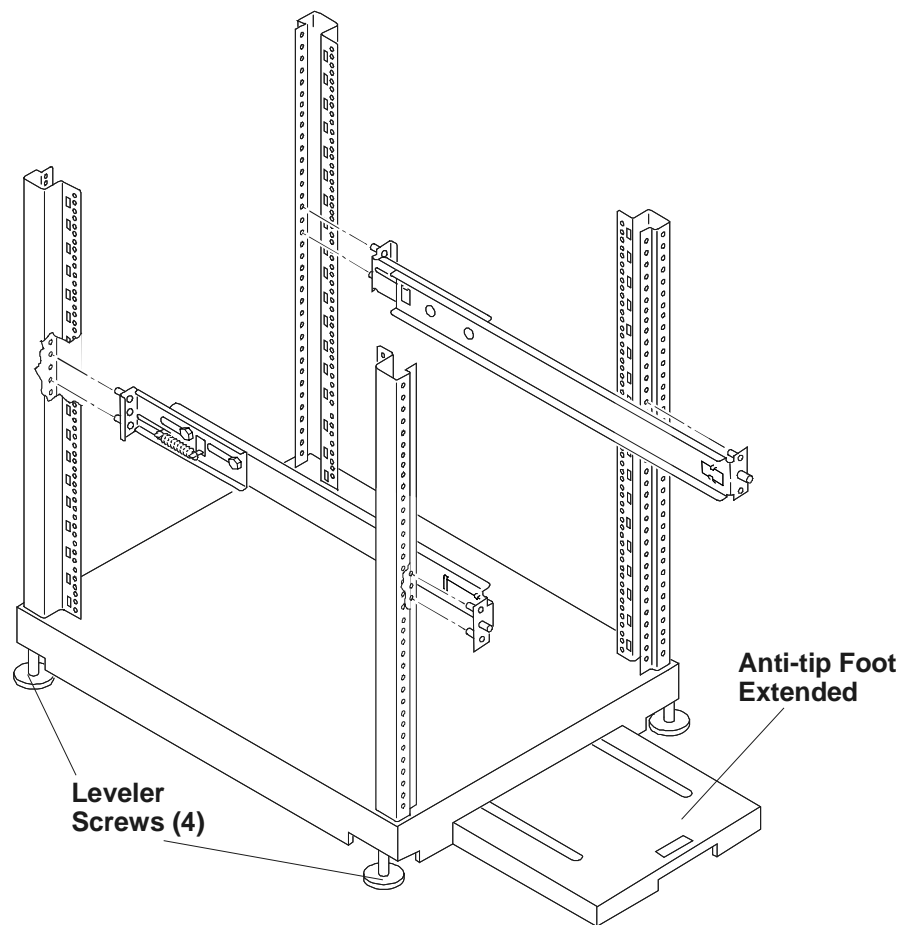


Figure 8-4. Mounting Outer-Rails to Columns

4. Match the outer-rail pins to the column holes (1st & 3rd) marked on the front and rear columns. See Figure 8-3.

The mounting pins of the outer-rails should go into the inside face of the rear column and the front face of the front column.

5. With the outer-rail assembly held in position at the rear, push in on the front outer-rail mount and place in the two holes in the front column face.

A tension spring allows the outer-rails to compress during installation. The outer-rails are held in place at the front of the rack by a flat spring tab at the rear face of the front columns. See Figures 8-2 and 8-5.

6. Repeat Steps 3 through 5 for the outer-rail on the right front and rear columns.
7. If you need to release the outer-rail assembly once it is installed into the rack, do the following:
 - a. Place your finger inside the rail at the point shown by the arrow to release the spring tab. See Figure 8-5.
 - b. Press in on the spring tab and pull the outer-rail assembly toward you at the front of the rack. See Figure 8-5.

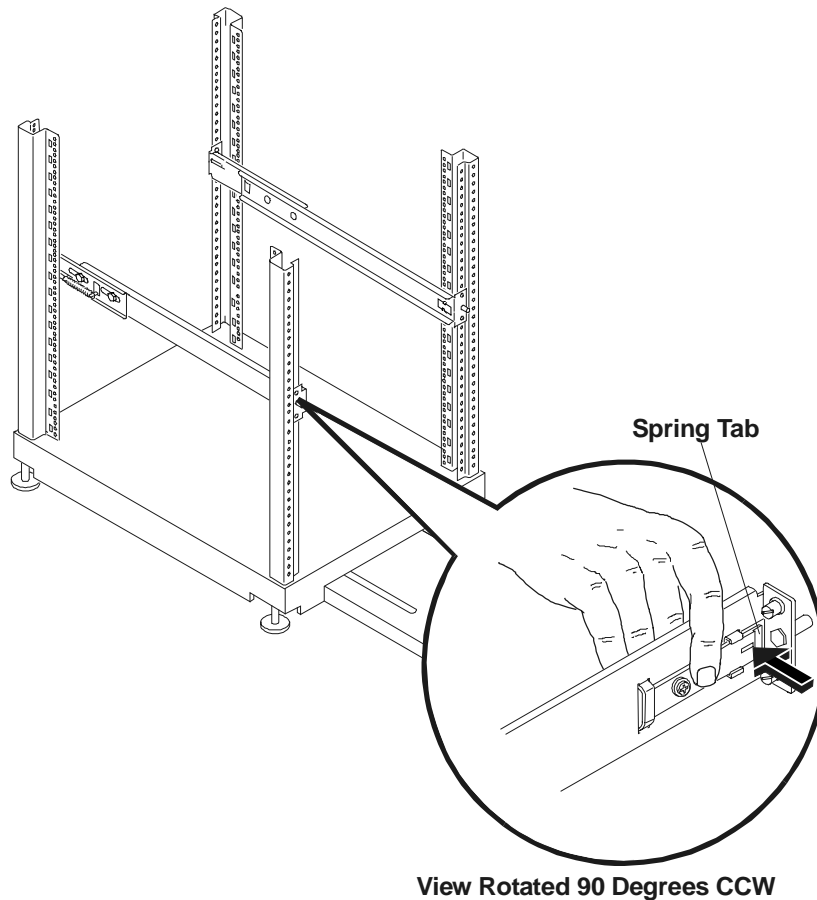


Figure 8-5. Releasing the Outer-Rail Assembly

Placing the HP Netserver in the Rack

Use this procedure to insert the HP Netserver into the outer-rail assemblies mounted in the rack. Once the Netserver is in the rack, then you can connect the cables to the rear of the Netserver.

WARNING

To prevent rack instability while mounting the HP Netserver, ensure the rack's anti-tip foot is pulled forward out of the bottom of the rack. Failure to do so could result in injury and equipment damage.

To prevent the rack from rolling while you mount the HP Netserver, ensure the leveler screws on the rack's lower four corners are in firm contact with the floor. See Figure 8-4.

1. Ensure the leveler screws on the rack's lower four corners make firm contact with the floor. See Figure 8-6.
2. Ensure you have extended the anti-tip foot from the rack before continuing with this procedure. See Figure 8-6.

NOTE

The HP Netserver weighs 32 lbs. (14.5 kg.) fully loaded. It is not necessary to use two people when placing the Netserver into the rack, but it may be helpful.

3. Lift the HP Netserver by its inner rails off the floor or pallet.
4. Move the rear of the rails mounted on the Netserver just beyond the inside edge of the outer-rail assemblies. See Figure 8-6.

The mounting rails should sit just inside the outer-rails with nothing preventing the Netserver from moving into the outer-rails.

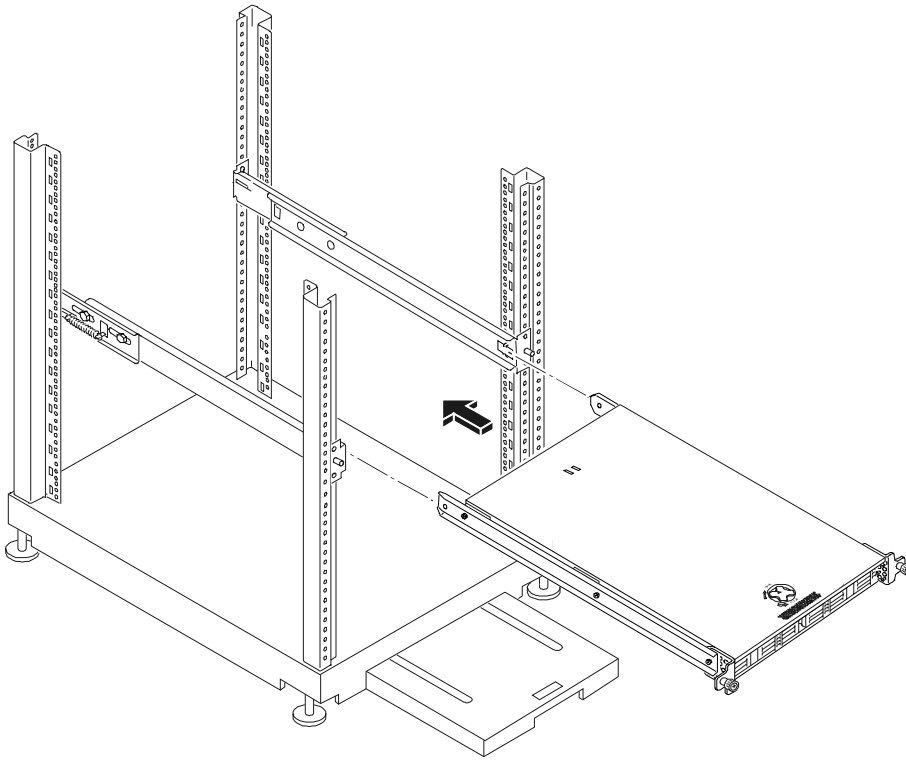


Figure 8-6. Mounting the HP Netserver

5. Slowly move the Netserver chassis into the outer-rail assemblies until the Netserver is completely in the rack. See Figures 8-6.

The securing brackets on the front of the Netserver should stop the chassis from going all the way into the rack.

6. Secure the Netserver chassis to the rack with the captive screws.

Attaching the Front Bezel

The front bezel attaches to the HP Netserver by pivoting on two pins at the bottom and grasping the top pins with spring latches. The middle pins force the bezel to pivot in or out, ensuring a rotating action.

1. Position the Bezel in front of the HP Netserver LP 1000r as shown in Figure 8-7.
2. Push in on the bottom to engage the pins, allowing it to rotate up.
3. Push the bezel in at the top to engage the spring latches.

The spring latches should click when engaged.

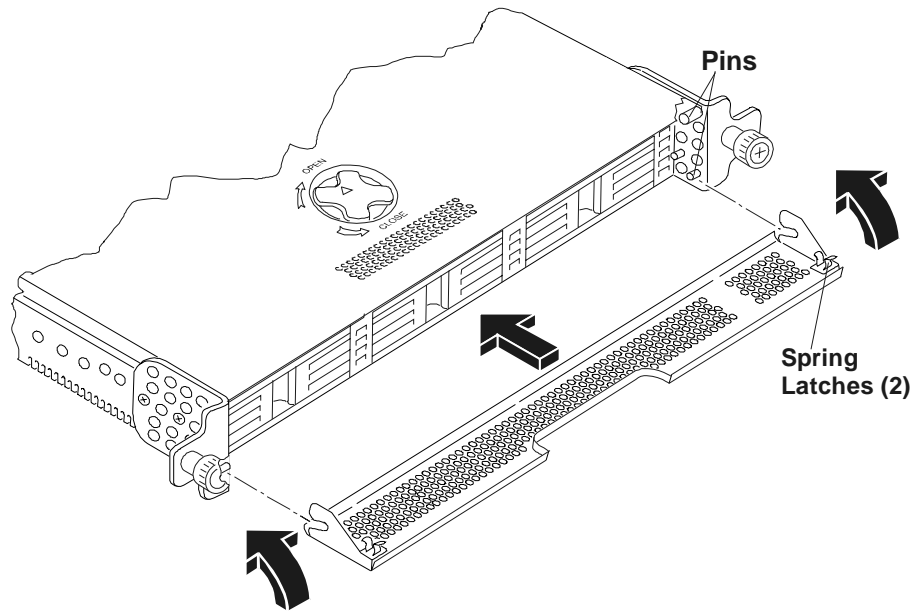


Figure 8-7. Attaching the Bezel

Continuing with the Rack Installation Process

After you install the HP Netserver in the rack, refer to the white paper, located on the HP web site for high-density rack configurations, to continue the process of installing and configuring the rack system. The white paper is titled *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

9 Connecting the Monitor, Keyboard, Mouse, and UPS

Introduction

Use the procedures listed here to connect the peripheral devices to the HP Netserver LP 1000r.

1. Connect the monitor, keyboard, and mouse to the HP Netserver LP 1000r using the connections provided on the rear of the chassis. See Figure 9-1.

When connecting the Netserver to peripherals, use the cable ties and labels provided with the product.

NOTE	The two USB connectors are reserved for printers, scanners, and external modems, but not the keyboard or mouse.
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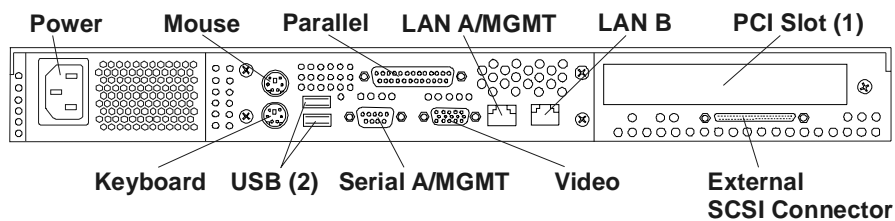


Figure 9-1. Rear Panel Ports

NOTE	If you have a console switch box, refer to the switch box user guide for instructions on connecting the keyboard, mouse, and monitor.
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CAUTION	The Keyboard and Mouse ports are both PS/2 ports, but are not interchangeable. If you plug the keyboard into the Mouse port, or the mouse into the Keyboard port, you will get an error message and the system will not finish the boot process.
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2. Connect the power cord to the rear of the Netserver. See Figure 9-1.
3. If LAN cables are needed, you may connect them now or wait until you have verified the Netserver's operation.

Connecting the UPS (Uninterruptible Power Supply)

1. If you do not have an UPS (Uninterruptible Power Supply) located in the rack, install it before attempting to connect it to the Netserver.
2. Connect the serial cable provided between the UPS and the HP Netserver.

Refer to the user guide included with the UPS for additional information and ensure you configure the Netserver's serial/management port correctly in Setup (BIOS) Utility.

NOTE

The HP Netserver's serial/management port must be configured correctly or the UPS and Netserver may not work correctly.

3. If you have connected the serial cable between the two devices, turn on the UPS.

The HP Netserver LP 1000r performs a diagnostic test when the power switch is turned on. If an error condition occurs, note any error code appearing on the display, then refer to Chapter 12, "Troubleshooting."

10 Configuring the HP Netserver

Introduction

This chapter describes how to configure the HP Netserver with the help of the *HP Netserver Navigator CD-ROM*, which is shipped with your Netserver. This CD-ROM also provides the latest information concerning your Netserver.

As you configure the Netserver, it's important to have the very latest configuration information. The CD-ROM will inform you of any applicable compatibility issues, and provide you with a current list of HP-tested peripherals and accessories. Refer to the "Tested Products List" on the *HP Netserver Navigator CD-ROM*, or on the HP web site at:

`http://www.hp.com/netserver/`

You should also be familiar with HP DiagTools (on the *HP Netserver Navigator CD-ROM*) and the *HP Netserver Online Documentation CD-ROM* to help you configure the Netserver.

HP Netserver Navigator CD-ROM

The *HP Netserver Navigator CD-ROM* provides you with two modes for running the CD-ROM and accessing its configuration utilities and resource information.

- **Setup mode:** insert the Navigator CD-ROM in your HP Netserver and boot from it. Use the Navigator interface to configure your system, view important information, and obtain drivers and utilities to setup your HP Netserver through the installation of the Network Operating System (NOS).
- **Resource mode:** insert the Navigator CD-ROM in a Microsoft Windows PC. The CD will autorun to display the Navigator interface. Use the Navigator interface to view online information resources and obtain drivers and software utilities.

Contents of the HP Netserver Navigator CD-ROM

The Main Menu of the Navigator CD directs you to modules where you can perform the required configuration tasks, or access the utilities used in the configuration process. These tasks include:

- Configuring the Netserver hardware (Setup mode only)
- Preparing the Netserver for NOS installation (Setup mode only)
- Viewing information about the Netserver (such as Readme file, Configuration Advisories, Tested Products List)
- Obtaining software and drivers for the Netserver

Before the HP Navigator Main Menu is displayed initially, you may be prompted to set the language, time, date and select an Network Operating System (NOS) to be used throughout the session.

If you have questions about the how to use the Navigator CD, refer to the instructions provided with the Navigator CD-ROM or the Help menu.

Obtaining HP Netserver Navigator Release History

The release history (archive) of the *HP Netserver Navigator CD-ROM* provides you with a list, in numerical order, of the firmware upgrades and software drivers for the HP Netserver. The release history is updated in the archive for each new release of the *HP Netserver Navigator CD-ROM*. The most current Status Report provides the latest information for your particular HP Netserver. To ensure you have the latest versions of the HP Netserver Navigator software, obtain the current *HP Netserver Navigator CD-ROM* release history in the archive.

The following items are contained in the Status Report for each CD-ROM release:

- Version number (HP Netserver model specific)
- HP models supported
- Release date
- Document Number
- Part number of the HP Navigator CD-ROM
- Major changes to the HP Navigator CD-ROM made for a specific release

The Status Report for your specific *HP Netserver Navigator CD-ROM* describes in detail any software updates between this version of the CD-ROM and the previous version.

Status Report Identification

You must compare the Document Number on your *HP Netserver Navigator CD-ROM* with the most current Status Report's Document Number for your HP Netserver model.

- Each version of the *HP Netserver Navigator CD-ROM* has a four-digit Document Number, such as 77xx, corresponding to a Status Report, printed on the disk.
- Each Status Report has a different Document Number.

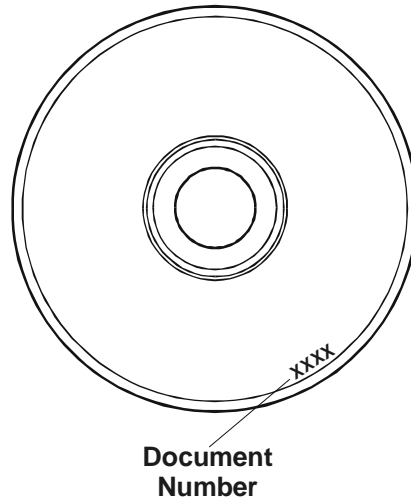


Figure 10-1. Location of Document Number on Navigator CD

You can obtain the release history (archive) and Status Report for your CD-ROM in one of these ways:

- Internet WWW--
<http://Netserver.hp.com/netserver/support/>
- Internet FTP -- **<ftp://ftp.hp.com/pub/servers>**

Once on the web site, select from the following items:

1. Under Support Offerings and Support Categories, click on HP Netserver Navigator CD.

HP Netserver Navigator CD >> Latest information for your HP Netserver

2. Click on CD Status Report to view the latest information or the CD Archive to view the release history.

Netserver Navigator CD Status Report >> Ensures the latest documentation for your HP Netserver

Netserver Navigator CD Archive >> HP Netserver Navigator CD Status reports are arranged with the most recent archived version first

3. Click on the Document ID number to view the latest Status Report (Release Notes).

HP Management Solutions

HP Management Solutions is a comprehensive suite of utilities, applications, and built-in features to manage Netserver locally or from remote locations. If you are unfamiliar with these products or concepts,

- Go to the Management Web site on the HP Web Site at:

http://www.hp.com/go/netserver_mgmt

to view information on HP TopTools and all Netserver management options for your HP Netserver.

The following management options, briefly described here, are available for the HP Netserver LP 1000r. Read the *HP Netserver Server Management Reference Guide* included with your Netserver for more information. This guide covers TopTools and all Netserver management utilities and options for the Netserver.

- **HP TopTools Software** – This is the HP browser-based management software that provides remote administration and monitoring of critical Netserver components.
- **HP TopTools Remote Control Card** – This is an accessory PCI board that provides a connection for remote LAN or modem-based server management software (HP TopTools) when installed into the Netserver.
- **Integrated Remote Assistant** – This is an embedded product called *HP Integrated Remote Assistant* (also referred to as Integrated RA). Integrated RA combines intelligent hardware and software to provide administrators with instant notification of Netserver operations and events.
- **Alert-On-LAN 2 (AOL2) and Wake-on-LAN (WOL)** – These options allow simple remote server power management through the Embedded LAN A port. This feature allows the administrator to remotely power off, power on, reset or power cycle the Netserver. To use the AOL2 and WOL options, each one must be enable in the Netserver's (BIOS) Setup Utility

under Embedded LAN Controllers in the LAN A submenu (Configuration > Embedded LAN Controllers > LAN A).

You must also install the Netserver Agent software from the *HP Netserver Navigator CD-ROM*, and the AOL2 client software. Refer to the Netserver Alert-On-LAN 2 User Guide available online on the *HP Netserver Online Documentation CD-ROM* included with your system.

DiagTools

This utility provides an easy-to-use hardware diagnostic for Netserver verification, burn-in, and rapid troubleshooting. It must first be copied to diskettes and then executed from the diskettes.

NOTE	HP recommends using the HP DiagTools utility to verify all Netserver functions are operating correctly, after completing all the configuration topics. The HP DiagTools utility also generates a text file containing the hardware detected and the DiagTools test results. This text file, called a support ticket, should be saved to a diskette and used for future reference, especially by your support provider.
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Setup (BIOS) Utility

The HP Netserver (BIOS) Setup Utility is used to configure the following Netserver options:

- User Preferences
- Security
- Configuration
- Exit

Accessing the Setup Utility

The (BIOS) Setup Utility menu offers the choices listed above, and the corresponding items are described in the topics below.

1. Turn on the monitor and the HP Netserver.
2. Start the Setup Utility by pressing the [F2] key, when the following message appears on the boot screen.

Press <F2> to enter SETUP

Menu Bar

The Setup Utility provides a menu bar with several menu selections. The menu bar choices are:

- **User Preferences** - Use this menu option to set the Netserver time, date and keyboard functions.
- **Security** - Use this menu option to set Power-on password protections and hardware security options. Two choices are available under Security:
 - ◊ Power On Password - Use this option to set the power-on password, which will require a password to enter the Setup Utility or complete the boot process.
 - ◊ Hardware Security - Use the options under this head to enable or disable writing to flexible disk connected to the embedded controller. Also found here are switches for allowing booting from the flexible disk drive, hard disk drive, and CD-ROM.
- **Configuration** - Use this menu option to configure I/O ports, I/O addressing, interrupts, PCI slot masters, IRQ interrupt locking, and boot device ordering. These menu selections also provide access to enable/disable specific options or features, such as the Alert-on-LAN 2 feature.
 - ◊ Integrated I/O Port - Configure ports for serial and parallel, assign base addresses and interrupts, pointing devices (mouse), and console redirection for remote control.
 - ◊ Flexible Disk Drive - Enable or disable the flexible disk drive controller.
 - ◊ CPU and Memory - Enable or disable memory cache, memory hole, and processor serial number.
 - ◊ IDE Devices - Set primary master/slave, secondary master/slave relationships on IDE devices, and set the local bus IDE adapter.
 - ◊ PCI Slot Devices - Set a PCI slot as master and PCI IRQ locking. The BIOS warns of conflicts.
 - ◊ Boot Device Ordering - Set the boot order, including bootable boards.
 - ◊ Embedded LAN Controllers - Enable or disable the embedded LAN controllers and the available features. The Alert-on-LAN 2 (AOL 2) and Wake-on-LAN features are enabled/disabled under the embedded LAN A submenu.

- **Exit** – Exit the Setup Utility by saving changes or exit without saving changes, which reverts to previous settings. When you exit, the HP Netserver reboots.

Using the Setup Screens

Online help explains the settings displayed on the Setup Utility screens. Instructions are also provided for navigating between the screens and entering or changing the setup data.

- Press the right-arrow and left-arrow keys to move between selections on the menu bar. The menu bar is present at the top of the main selections.
- Press the up-arrow and down-arrow keys to move between fields on each screen. The currently-selected field will be highlighted.
- Certain fields ask you to choose from a list of entries. In such cases, press the plus (+) or minus (-) keys repeatedly to display each possible entry, or the **Enter** (or **Return**) key to choose from a pop-up menu.
- Small arrow points (➤) precede some field names. This means the field is actually a submenu. To visit the submenu, select it with the arrow keys and press the **Enter** key. The submenu then appears in place of the current screen.
- The **Esc** key is the exit key. If you press the **Esc** key on one of the top-level screens, the Exit menu appears. If you press **Esc** on a submenu, the previous screen appears. When you are making selections from a pop-up menu, use the **Esc** key to close the pop-up without making a selection.

Changing the System Date and Time

Use this topic to change the HP Netserver's date and time and refer to the following procedure.

1. To reach the Setup Utility, boot or reboot the system and press **F2** when prompted.
2. If necessary, use the left-arrow key to select **User Preferences** from the menu bar at the top of the screen.

Once in the Setup Utility, the menu bar appears at the top of the screen with " User Preferences, Security, Configuration, and Exit" shown. The User Preferences menu is the default menu and should be the highlighted selection at the left of the menu bar when the Setup Utility first opens.

3. If necessary, use the up-arrow key to move to the **System Time** field.

The "System Time" field is highlighted by default when the "User Preferences" menu is selected. This field actually consists of three sub-fields enclosed in brackets [xx:xx:xx]: hours to the left (24-hour clock), minutes in the middle, and seconds to the right.

4. Type in the hour and press **Enter** to move to the minutes field.
5. Then type in the minutes and press **Enter** again to move to the seconds field.
6. Type in the seconds and press **Enter**, then use the arrow keys to leave this field.
7. Scroll to **System Date** field to enter the system date in the field.

The dates are entered in the "System Date" field in the same way as the time is entered in the "System Time" field. This field also has three separate sub-fields for month, day, and year enclosed in brackets [xx/xx/xxxx].

8. Type in the month and press **Enter** to move to the day field.
9. Then type in the day and press **Enter** again to move to the year field.
10. Type in the year and press **Enter**, and then use the arrow keys to leave this field.

Ensure you enter all four digits for the year.

11. Use the right-arrow or left-arrow key to select the **Exit** menu.
12. Choose **Exit Saving Changes** from the list of exit options, then press **Enter**.

A dialog appears and asks you to confirm your decision.

13. Choose **Yes** and then press **Enter**.

Then the HP Netserver reboots.

Setting the HP Netserver's Boot Passwords

Use this topic to set a password to boot the HP Netserver.

To configure the HP Netserver for a password, which will require a password on boot-up, refer to the following procedure.

1. If not already in the Setup Utility, boot or reboot the system and press **F2** when prompted.

2. Use the right-arrow or left-arrow key to select **Security** from the menu bar.

As soon as it is selected, the selections for the Security menu appear as shown below.

➤ **Power-On Password**

➤ **Hardware Security**

The arrowhead ➤ indicates there is a submenu to select from.

3. If necessary, use the arrow key to move to the **Power-On Password** menu selection and press **Enter**.

The Power-On Password is highlighted by default when the Security menu is selected.

The first line in the menu is, "Power-on password is [Set or Not Set]"

- ◇ If no password has been set, then "Not Set" will appear in the field. If this is the case, then you can boot the Netserver without a password.

The Power-on password controls access to the Setup Utility and its settings, but will not be in effect until you reboot the Netserver.

- ◇ If "Set" is in the field, then you can change the password or remove the password, if you know the exiting password. If you do not know the existing password, then refer to "Resetting a Lost Password" in Chapter 12, "Troubleshooting."

NOTE	You must set the Power-on Password to configure the HP Netserver to boot with a password.
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4. Press the **Enter** key to enter a new password or change the old one.

A pop-up menu appears titled, "Set Power-On Password". If no password has been entered, the field "Enter new password: []" is highlighted. If a previous password has been entered, the field "Enter old password: []" is highlighted.

NOTE	To leave the pop-up menu without entering a password, press the Esc key at any time.
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5. Enter the password (new or old) in the appropriate field and press **Enter**.

The password is accepted and the next field just below it, "Re-enter new password: []" or "Enter new password: []" field is highlighted. For security reasons, the password does not appear on the screen.

6. Enter the new password in the "Enter new password: []" field.

NOTE

Entering nothing in the "Enter new password" field followed by entering nothing in the "Re-enter new password" field will turn off the password setting, changing it to "Not Set."

7. Enter the new password again in the "Re-enter new password: []" field.

The "Power-on Password is" field changes to "Set" and on the next boot the HP Netserver will request a password to access the Setup Utility and complete the boot process.

8. Press **Esc** to exit the menu and scroll to Exit to exit and save changes.

The Netserver will reboot and you will be required to use your new password to enter the Setup Utility or complete the boot process. If you forget your password, refer to "Resetting a Lost Password" in Chapter 12, "Troubleshooting."

SCSI Configuration Utility

The HP Netserver uses the Symbios SCSI Configuration Utility to verify or modify the embedded SCSI controller settings for the devices connected to the two SCSI channel connectors on the system board. If you need to verify or modify SCSI host adapter settings, or if you need to low-level format SCSI disks or verify SCSI disk media, run the Symbios Configuration utility:

NOTE

You typically would not need to use this utility unless you are an experienced administrator or requested to do so by a support provider.

During the boot process the message "SCSI BIOS successfully loaded" will appear if there are devices connected to the SCSI controller. The SCSI controller can provide the bus, device, and channel configurations when active on screen.

To access the Symbios SCSI Configuration Utility, refer to the following instructions.

1. Reboot the HP Netserver.

If you are already in the boot process, you should see the following message appear.

Press <Ctrl C> to start Symbios
Configuration Utility...

2. Press <Ctrl + C> keys to enter the utility.
3. Use the arrow keys to move the cursor, press **Enter** to select an option, and press **Esc** to exit.
4. To change adapter settings:
 - ◇ Select an adapter from the list in the main menu.
 - ◇ Select **Adapter Setup**.

This option configures the SCSI ID setting and other advanced adapter settings.
5. To format a hard disk or change hard disk parameters:
 - ◇ Select an adapter from the list in the main menu.
 - ◇ Select **Device Selections**.
 - ◇ Select the hard disk to format.
 - ◇ Select **Format** menu option.

CAUTION	Low-level formatting of a SCSI disk drive will destroy all of its data.
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11 HP Netserver Online Documentation CD-ROM

Overview

The *HP Netserver Online Documentation CD-ROM* contains the entire set of documentation for your HP Netserver LP 1000r. The Online Documentation CD provides a web-based interface that allows you to quickly and efficiently locate necessary information including.

- Complete documentation of your HP Netserver and accessories
- Important information on installing your NOS
- Error message and beep code descriptions
- Available diagnostics and limited servicing information
- Limited parts lists
- Available management software options and documentation

Using the Online Documentation CD

The *HP Netserver Online Documentation CD-ROM* contains all your system documentation online. To use this CD you must have a browser (either Microsoft Internet Explorer 4.x (or greater), or Netscape Navigator version 4.x (or greater)) and the Adobe Acrobat Reader version 3.x or greater.

The CD may be accessed in one of the following ways:

- The CD will start automatically when inserted into a PC running Microsoft Windows 95, 98 or NT 4.0.
- Or, point your browser to **index.htm** under the **start** directory of the CD-ROM.

12 Troubleshooting

Introduction

If you are having problems installing your HP Netserver, there are a number of different tools available for troubleshooting, including the information provided in this chapter.

- *HP Netserver Online Documentation CD-ROM* contains the following information in the *HP Netserver LP 1000r Service Manual*.

- ◇ Troubleshooting Information
- ◇ Parts Information
- ◇ List of Error Messages
- ◇ List of Beep Error Messages

- Navigator CD-ROM provides several utilities for troubleshooting purposes.

At the Main Menu, select "Troubleshooting" to use the following tools:

- ◇ Diskette Library - A collection of diskette images representing drivers, utilities and BIOS updates, which enables you to conveniently generate any flexible diskette available on the *HP Netserver Navigator CD-ROM*. For example, you can create the following diskettes: BIOS Update and NOS Drivers.
- ◇ HP DiagTools Utility - An easy-to-use hardware diagnostic for Netserver verification, burn-in, and rapid troubleshooting. Use this icon to copy DiagTools to two (2) flexible diskettes from the *HP Netserver Navigator CD-ROM*, and then execute from the flexible diskette.

Tools Required

Check the documentation provided with the NOS and accessory boards for additional tool requirements.

- 1/4-inch flat blade screw driver (for the battery replacement)

Common Installation Problems

The following sections contain general procedures to help you locate installation problems. If you need assistance, HP recommends contacting your reseller first. If you need to get assistance from Hewlett-Packard, refer to the *HP Netserver Warranty and Service/Support* booklet provided with the Netserver.

WARNING

Before removing the cover, always disconnect the power cord and unplug telephone cables. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry.

Troubleshooting Sequence

To troubleshoot problems during installation, do the following:

- First, ensure the HP Netserver is configured properly.

Most Netserver problems are the result of incorrect Netserver and SCSI configurations.

- Verify all cables and boards are securely plugged into the appropriate connectors or slots.
- If it is a network-related error, determine if the Netserver has enough memory and hard disk drive capacity.

Refer to the network operating system (NOS) manual.

- Remove all added options to ensure you have isolated the problem to basic Netserver or its options.

Always replace one and only one option at a time.

NOTE

If the Netserver has a large amount of memory installed, it may take 30 seconds for the first screen to display.

Netserver Will Not Power On

Follow these steps if the power/activity light does not light green after you press the power-on button, or the Netserver will not power on properly.

NOTE	If the heatsink is not properly installed on the processor, the processor may overheat causing intermittent or unreliable operation leading to a possible system crash and permanent damage to the processor.
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1. Remove the AC power cord, wait 15 seconds, reconnect the power cord, and try again.
2. Ensure all cables and the power cord are firmly plugged into the proper receptacles.
3. If the Netserver is plugged into a switched multiple-outlet box, ensure the switch on the outlet box is turned on.
4. Plug a different electrical device (such as a printer) into the power outlet, and turn it on to verify if the fault is with the power supply.
5. Verify the power supply is connected to the system board.
6. Verify the front power switch is connected to the system board.

Problems after Netserver is Powered On

If you suspect a hardware error, follow these steps and refer to "Hardware Problems" later in this chapter.

1. Log users off the network and power down the HP Netserver.
2. Remove the Netserver's cover.

WARNING	Before removing the cover, always unplug telephone cables and disconnect the power cord. Unplug telephone cables to avoid exposure to shock hazard from telephone ringing voltages. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry.
----------------	---

3. Simplify the HP Netserver configuration to the required minimum, removing all third-party options.

For example, reduce the Netserver to the monitor, one flexible disk drive, one CD-ROM drive, one SCSI hard disk drive, keyboard, mouse, and one NIC.

4. Power on the Netserver to start the boot process.

5. If the Netserver will not complete the boot process:
 - a. Check the heatsinks on the processors for good contact.
 - b. Consult the troubleshooting steps in the section "Hardware Problems" later in this chapter.
 - c. If you get an error message or beep code, refer to the following section "Error Messages."
 - d. Clear the CMOS memory and reboot.
Refer to "Clearing the CMOS Configuration" later in this chapter.
6. If you have completed a boot of the Netserver successfully, reinstall the third-party options one at a time, checking the Netserver after installing each option.

Error Messages

There are three kinds of error messages. Two message types appear on screen during the POST process and include text messages or alpha-numeric code. The third type is not a visual message, but an audible message (beep codes). Any one of these three types of error messages could point to a problem, which might prevent the Netserver from completing the boot process. The three types are describe in the following bulleted list.

- Text error messages (reverse video) – These text messages display in black text on white background and can provide more information on screen.
Press the [Enter] key to see a definition of the message and what action to take to remedy the problem. A sample of these messages appear in Table 12-1.
- Power-on self test (POST) codes - These codes display in normal video (white text on black background) and may be a text message or an alpha numeric code. If an error with a text message occurs during the POST, details of the error are displayed. Follow the instructions on the screen. If an alpha-numeric code appears, refer to the codes listed in the *HP Netserver LP 1000r Service Manual*.
- Beep Codes – These are series of audible beeps, which occur during the boot process before the video display can initialize allowing the visual messages of the POST routines to appear. If you hear a series of audible beeps before the video appears on screen, refer to the beep codes listed in the *HP Netserver LP 1000r Service Manual*.

No Error Messages Displayed On Screen

General Checks:

1. Listen for beep codes.

If you hear a series of audible beeps refer to the beep codes listed in the *HP Netserver LP 1000r Service Manual*.

If no beep codes are heard, continue with the next step.

2. Verify all external cables and power cables are firmly plugged in.
3. Verify the power outlet is working.
4. Verify the Netserver and monitor are turned on.
The power-on indicator should be illuminated.
5. Verify the display's contrast and brightness settings are correct.
6. Verify all internal cables are properly connected and all boards firmly seated.
7. Verify the processor and its heatsink are fully seated in its socket on the system board.
8. Verify the DIMMs are installed correctly and fully seated.
9. Verify the DIMM notches are aligned to the keys in the DIMM connector.

After Installing an Accessory:

1. Turn off the monitor, the Netserver, and any external devices.
2. Unplug all cables from the power outlet.
3. Remove the cover.
4. Check the following:
 - ◇ If you have installed an accessory board, verify the board is firmly seated in its slot and any switches or jumpers on the accessory board are properly set.
Refer to the documentation provided with accessory board.
 - ◇ Check all internal cabling and connections.
 - ◇ If you have changed any switches on the system board, verify each one is properly set.

NOTE	Only two of the eight switches on configuration switch are used.
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5. Replace the cover and connect all cables.
6. Turn on the monitor and Netserver.
7. If the Netserver still does not work:
 - ◇ Repeat steps 1, 2, and 3 of this section.
 - ◇ Remove all accessories, except the primary boot hard disk drive.
 - ◇ Replace the cover and connect all cables.
 - ◇ Turn on the monitor and the Netserver.
 - ◇ If the Netserver now works, replace the boards and accessories one at a time to determine which one is causing the problem.
8. If the Netserver still does not work contact your service representative to replace the Netserver.

POST Error Messages

If you get a POST text error message in reverse video, press the **[Enter]** key (View System Error) to get a more detailed explanation and a possible solution.

If the Netserver starts, but POST still reports an error message, clear the CMOS configuration, as described later in this chapter.

NOTE	HP recommends you correct the error before proceeding, even if the Netserver appears to start successfully.
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Table 12-1 describes the typical POST text error messages and the corrective action you may take to remedy the problem.

Table 12-1. POST Error Messages

Message	Corrective Action
Operating system not found	<ul style="list-style-type: none"> • Verify the desired boot drive has power and its SCSI cable connected. • Verify the SCSI cable is securely plugged into the SCSI connector on the system board. • Verify the boot device is enabled in the Setup Utility under the Security menu. • Verify the boot device has an operating system installed. <p>If the problem persists, contact your HP support organization.</p>
Keyboard error (The LP 1000r will complete the boot process without a keyboard connected.)	<ul style="list-style-type: none"> • Verify the keyboard is connected to the correct connector (not the mouse connector) at the rear of the Netserver. • Verify the connector is pushed completely. <p>If the problem persists, replace the keyboard or contact your HP support organization.</p>
Mouse error (The LP 1000r will complete the boot process without a mouse connected.)	<ul style="list-style-type: none"> • Verify the mouse is connected to the correct connector (not the keyboard connector) at the rear of the Netserver. • Verify the connector is pushed completely. <p>If the problem persists, replace the mouse or contact your HP support organization.</p>
If no message appears (screen is blank)	<ul style="list-style-type: none"> • If no text or messages appear listen for the beep codes. Refer to the beep codes listed in the <i>HP Netserver LP 1000r Service Manual</i>. • If no message appears but the Netserver stops after POST, verify the DIMMs are correctly installed. • If you suspect the BIOS is corrupted, refer to "Clearing the CMOS Configuration," and restart the Netserver.
If a configuration error occurs	<p>If a Netserver configuration error is reported during the startup routine, clear the CMOS memory as described under "Clearing the CMOS Configuration," and restart the Netserver.</p>

**System CMOS
checksum bad**

- Press <F2> to run Setup.
- Change settings as required.
- Choose the Exit option, selecting Save Changes and Exit to save the new settings.

The Netserver should reboot.

Power-On Self Test (POST) Error Codes

These error codes (POST codes) appear in normal video if an error condition occurs during the boot process of the HP Netserver LP 1000r. All the codes and the respective descriptions are listed in the *HP Netserver LP 1000r Service Manual*, but not all the codes apply to this Netserver. The service manual is also located on the *HP Netserver Online Documentation CD-ROM*, provided with the HP Netserver.

These codes will appear on the display monitor, provided it and the supporting circuitry are functioning.

NOTE

Do not take remove/replacement actions until you have taken other troubleshooting steps. See the troubleshooting checklist.

Clearing the CMOS Configuration

You may need to clear the CMOS configuration if the configuration has been corrupted, or if incorrect settings made in the Setup Utility have caused error messages to be unreadable.

To clear the configuration:

1. Turn off power to the Netserver and remove the cover.
2. Move switch 4 in the configuration switch on the system board (labeled "Clear CMOS") to the ON position. See Figures 12-1 and 12-2.
3. Turn on power to the Netserver.

A message displays indicating the configuration has been cleared.

4. Turn off power to the Netserver.
5. Return switch 4 on the system board to the OFF position.
6. Replace the cover.

7. Turn on power to the Netserver and the following message displays:
 Incorrect System Configuration
8. Press <F2> to run the Setup Utility when <F2=Setup> appears.
9. Make any configuration changes required.
10. Choose the Exit option and save the changes to save the configuration and exit the Setup Utility.

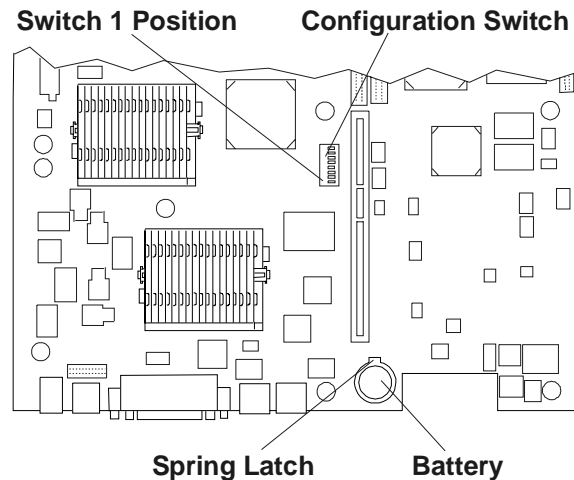


Figure 12-1. Configuration Switch Location

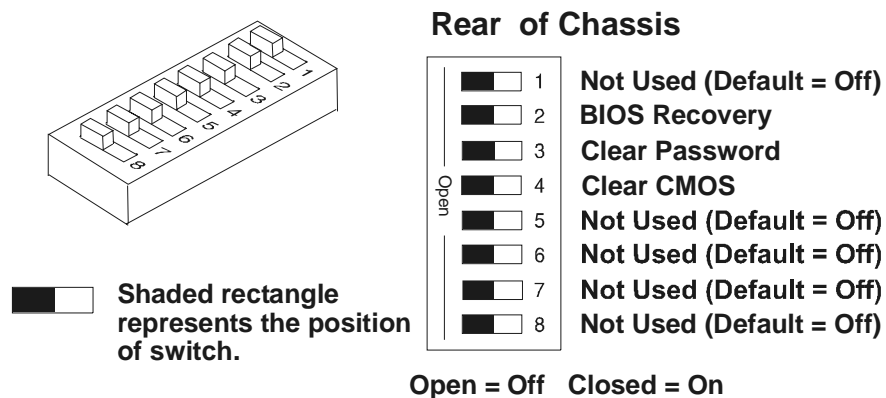


Figure 12-2. Configuration Switch Positions

Resetting a Lost Password

If you have forgotten the Power-on password, you can reset it using the configuration switch on the system board.

NOTE

If you have forgotten the Power-on password, your Netserver will function normally, but you will not be able to access the configuration settings in the Setup Utility or complete the boot process if you reboot the Netserver.

1. Turn off power to the HP Netserver.
2. Remove the cover.
3. Move switch 3 in the configuration switch on the system board (labeled "Clear Password") to the ON position. See Figures 12-1 and 12-2.
4. Turn on power to the Netserver and allow it to complete its startup routine.
The old password will be erased.
5. Turn off power to the Netserver.
6. Return switch 3 on the system board to the OFF position.
7. Replace the Netserver cover.
8. Turn on power to the Netserver and allow it to begin its startup routine.
9. If you wish to set a password again, press <F2> to start the Setup Utility.
10. Set the new password.
11. Choose the Exit option and save the changes to save the new password.

Hardware Problems

This section describes what to do if you have problems with your monitor, mass storage devices, printer, accessory boards, keyboard, or mouse.

Monitor Does Not Work

NOTE

If the Netserver has a large amount of memory installed, it may take 30 seconds for the first screen to display.

1. If nothing is displayed on the screen, but the Netserver starts and you have verified the keyboard, disk drives, and other peripheral devices are functioning properly:

- ◇ Verify the monitor is plugged in and power is turned on.
- ◇ Verify the brightness and contrast controls of the monitor are properly set.
- ◇ Verify the monitor video cable is securely connected to the Netserver.
- ◇ Turn off the monitor and Netserver and unplug each one from the power outlet.
- ◇ Disconnect the video cable from the Netserver and examine the video cable connector pins to see if any are bent.

If any of the pins are bent, carefully straighten each one.

- ◇ If you have manually configured any accessories, verify each one does not use the same I/O address as the integrated video interface (03B0h to 03DFh).

Refer to the documentation supplied with the accessory for more information.

2. If the display image does not align with the screen (usually after you have changed resolutions), use the display's controls to center the image.

Refer to the monitor manual for information about the controls.

3. If the screens generated by the NOS do not look right, check the operating system manual to find out which video standard is required.

Also check your monitor manual to find out which refresh rate is required.

4. If the screen goes blank after the NOS has booted, contact your HP support organization.

Keyboard or Mouse Does Not Work

1. Verify the keyboard and mouse are connected to the correct connectors.

Refer to the I/O panel label on the rear panel of the Netserver.

2. Verify the mouse is correctly defined in the control options of your NOS.
3. Clean the mouse ball and rollers using a lint-free cloth.

CD-ROM Drive Does Not Work

1. Verify a CD is inserted in the drive.
2. Verify the power and data cables are correctly connected to the device.
3. Verify the CD-ROM is configured correctly in the menu located under the Security menu in the Setup Utility.
4. If you intend to boot from the CD, ensure the option is enabled in the Setup Utility.
5. For further information, refer to your CD-ROM documentation.

SCSI Device Does Not Work

If error messages display on the monitor indicating a failure of a SCSI hard disk or tape backup device, perform these checks:

1. Verify the power cable is securely connected to the drive, and the flat cable is securely connected to the drive and to the SCSI connector on the system board.
2. Verify all SCSI devices have unique IDs.
3. Ensure your SCSI device is not terminated.
4. Ensure connector pins are not displaced or distorted.

Replacing a Battery

If your HP Netserver repeatedly loses its configuration or the processor clock stops, you should replace the battery.

WARNING

There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

1. Power down the HP Netserver and unplug power cord.
2. Gain access to the system board by following the appropriate instructions for removing the chassis from the rack and removing the top cover.

Refer to Chapter 2, "Opening and Closing the HP Netserver," to gain access to the system board.

3. If necessary, remove the PCI board to gain access to the battery.
See Figure 12-2.
4. Insert a small flat-blade screwdriver or similar tool between the battery and spring latch. See Figure 12-3.
5. Push the spring latch away from battery to release the battery.

The spring contacts beneath the battery cause it to pop up allowing you to grasp the battery.

6. Remove the existing battery.

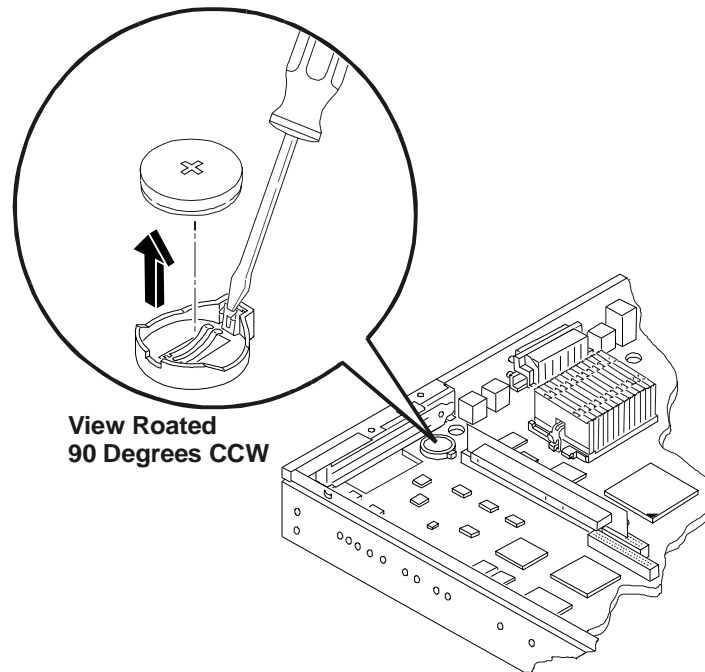


Figure 12-3. Battery on System Board

7. Insert the new battery with the positive sign (+) facing up in the socket.
8. Press down on the center of the battery with your thumb, pushing the battery down into the socket.

The battery should snap into place.

9. Ensure the spring latch holds the battery firmly.
10. If necessary, replace the PCI board and replace the top cover.
11. Re-install the Netserver into the rack.
12. Power on the Netserver and reset the CMOS settings.

Problems Running the Setup Utility

If you cannot run the Setup Utility, the HP Netserver's configuration in CMOS memory may have become corrupt. The only way to recover from a corrupted configuration is to clear it. Refer to "Clearing the CMOS Configuration," earlier in this chapter.

13 Alternative Rack Mounting (4-Post)

Introduction

This chapter provides the instructions for mounting the HP Netserver in a four-post (column) HP Systems rack. Figure 13-1 shows the Systems rack. If you have the newer 4-post HP System/E or System/U racks, go to Chapter 8. If you are mounting the Netserver in a 2-post non-HP rack, refer to Chapter 7, or see the documentation in the appropriate rack accessory kit.

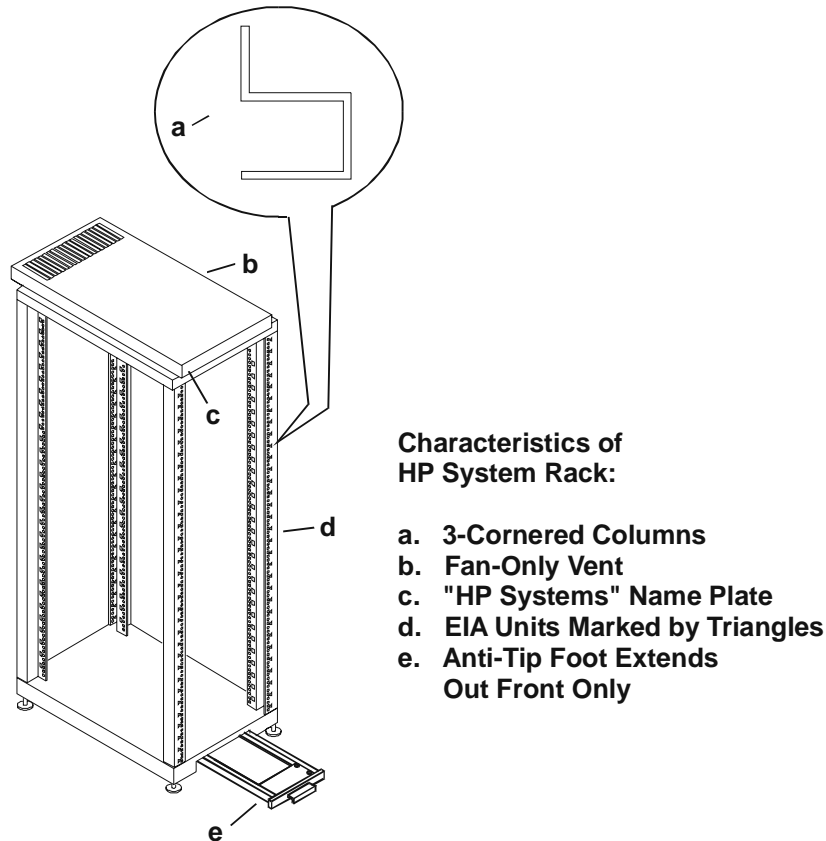


Figure 13-1. HP System Rack

Before mounting the Netserver, determine the Netserver's location in the rack relative to other rack components. Proper placement is vital both for safety and operating efficiency. For more information, refer to "Rack Configuration Tools" later in this chapter.

NOTE

If the HP Netserver is completely configured by the vendor before delivery to the customer, then mounting the HP Netserver in the rack may be the final step in the installation procedure. If the vendor configures the HP Netserver at the customer's site, installation of the network operating system and other software may occur after the HP Netserver is mounted in the rack.

CAUTION

If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.

Tools Required

This rack mounting kit is provided as a tool-less assembly, but does need a nut driver or wrench to release the spring mechanism after shipping.

- Nut driver (10-mm) or wrench (release spring mechanism after shipping)
- Masking tape or marking pen

Rack Configuration Tools

The HP rack configuration tools, including white papers, are available on worldwide web at HP's web site. Enter the following URL in your browser:

`http://www.hp.com/netserver`

At the Web site, search for "configuration tools" and "high density rack solutions," specifically Rack Assistant, Rack Configuration, Order Assistant, and *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

You can read about the tools or download copies for installation. These tools can be used to plan a rack configuration for the components in your system.

The white papers, specifically *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*, provide rack information for HP Netservers in the high-density racks and additional information for rack systems not listed in this manual. You will need this information to complete a rack system installation.

Safety Precautions

Always keep the following safety and environmental issues in mind, especially if you install the HP Netserver in a non-HP rack environment:

- **Optimum Operating Environment** – The optimum operating conditions for the HP Netserver is in an environmental controlled computer room with a temperature range of 20 to 22° C (68 to 72° F) at 40 to 60% relative humidity.
- **Maximum Ambient Temperature** – Ensure the maximum ambient temperature does not exceed 35° C (95° F).
- **Elevated Operating Ambient Temperature** – The ambient operating temperature within a closed or multi-unit rack assembly may exceed the room's ambient temperature. Ensure the temperature within the rack itself does not exceed 35° C (95° F).
- **Reduced Air Flow** – As you mount equipment in the rack, ensure you allow enough air flow for safe operation of the equipment. The Netserver's fans will only operate correctly if both front and rear doors of the rack allow free air flow (perforated openings), or are removed.
- **Mechanical Loading** – Uneven mechanical loading within the rack can cause hazardous conditions. To prevent uneven loading plan to place the heaviest components in the bottom of the rack, mounting all components as low in the rack as possible.
- **Circuit Overloading** – Ensure the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** – Maintain reliable grounding of rack-mounted equipment. Give particular attention to supply connections not directly connected to the branch circuit (such as, using non-HP power strips).

Preparing the Rack

The outer-rail assemblies must be released after shipment and the columns must be marked before mounting the outer-rail assemblies. Once the outer-rails are correctly mounted, then the HP Netserver LP 1000r can be installed into the rack. A template is not provided because the Netserver is exactly one EIA unit high and can only fit into one EIA unit, but not across two EIA units.

NOTE	The HP Netserver weighs 32 lbs. (14.5 kg.) fully loaded. It is not necessary to use two people when placing the Netserver into the rack, but it may be helpful.
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HP Netserver Rack Mount Parts List

Ensure the rack-mounting kit provided with the HP Netserver contains the following parts:

Table 13-1. Parts for Rack Mount Kit

Quantity	Description
2	Outer-rail assembly

Releasing Outer-Rail Assemblies

This is only required the first time the outer-rail assemblies are shipped. The outer-rails are compressed for shipping and held in place with two 10-mm nuts. These nuts must be turned turn to release the spring assembly and then turned back to hold the spring assembly in place with freedom to move back and forth. See Figure 13-2.

1. Turn both nuts counterclockwise (CCW) $\frac{3}{4}$ of a turn to release the spring assembly.
2. Turn both nuts back clockwise (CW) $\frac{1}{4}$ of a turn to hold the spring assembly in place.

The spring assembly must be able to move freely back and forth to aid in installation of the outer-rails into the rack.

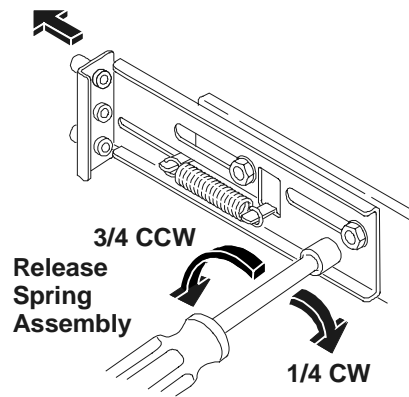


Figure 13-2. Releasing Spring Assembly

Marking the Columns

Use this section to mark the front and rear columns of the HP Systems rack. The outer-rails mount to the face of the front columns and the inside face of the rear columns. The masking tape (or marking pen) is used to identify and mark the locations on the columns.

CAUTION

If other rack components are to be mounted in the rack below the HP Netserver, install those components before starting to mount the Netserver.

NOTE

Use the *HP Rack Configuration Tools* to determine where in the rack to mount the HP Netserver.

1. Find the EIA unit markings on the rack and the location for the Netserver.

The screw holes cover a span of only one EIA unit, which is the height requirement of the HP Netserver.

NOTE

The Netserver can only be mounted into both holes of one EIA Unit, but cannot be mounted across two EIA units. You cannot use a hole in one EIA unit and a hole in another EIA unit.

2. Use the masking tape (or marking pen) to mark above the 3rd hole up on both front columns, as shown in Figure 13-3.

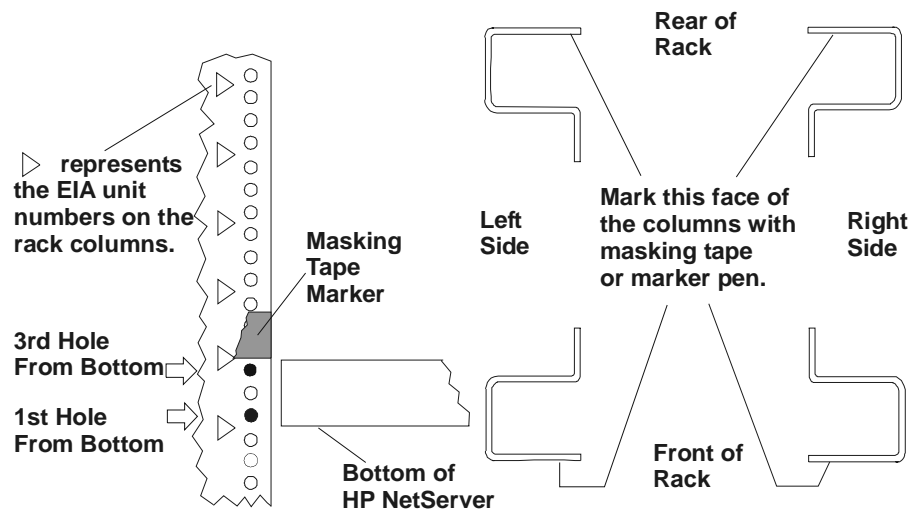


Figure 13-3. Location Marks on the Rack's Columns

3. Mark the inside face of the left-rear and right-rear rack columns, with masking tape, as shown in Figure 13-3.

Attaching Outer-Rails to the Rack

No tools are required to attach the outer-rail assemblies to the rack columns.

1. Pull the anti-tip foot forward out of the bottom of the rack.
See Figure 13-4 for the anti-tip foot location.
2. Lower the leveler screws on the rack's lower four corners to make firm contact with the floor. See Figure 13-4.
3. Align the left outer-rail assembly to the left front and rear columns as shown in Figure 13-4.
4. Match the outer-rail pins to the column holes (1st & 3rd) marked on the front and rear columns. See Figure 13-3.

The mounting pins of the outer-rails should go into the inside face of the rear column and front face of the front column.

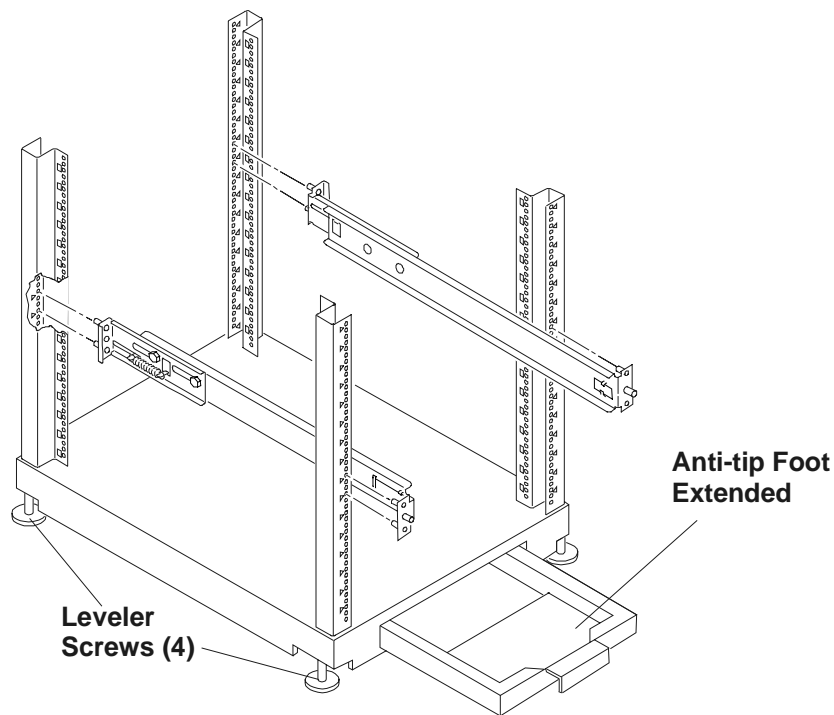


Figure 13-4. Mounting Outer-Rails to Columns

5. With the outer-rails held in position at the rear, push in on the front outer-rail mount.

A tension spring allows the outer-rails to compress during installation. The outer-rails are held in place at the front of the rack by a flat spring tab at the rear face of the front columns. See Figures 13-2 and 13-5.

6. Repeat Steps 3 through 5 for the outer-rail assembly on the right front and rear columns.
7. If you need to release the outer-rail assembly once installed into the rack, do the following:
 - a. Place your finger inside the rail at the point shown by the arrow to release the spring tab. See Figure 13-5.
 - b. Press in on the spring tab and pull the outer-rail assembly toward you at the front of the rack. See Figure 13-5.

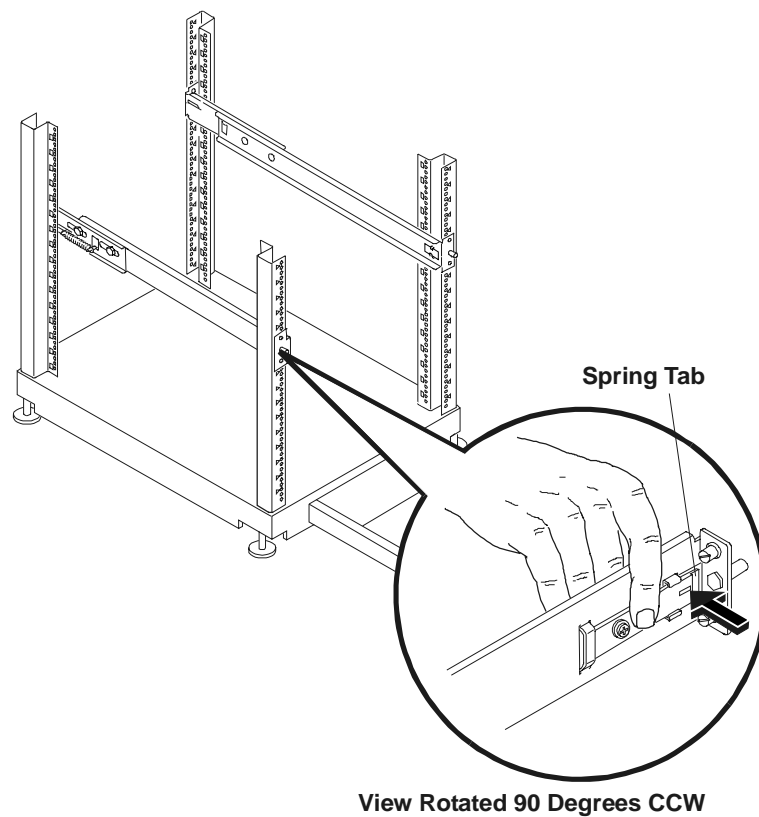


Figure 13-5. Releasing the Outer-Rail Assembly

Placing the HP Netserver in the Rack

Use this topic to insert the HP Netserver into the outer-rail assembly mounted in the rack. Once the Netserver is in the rack, you can connect the cables to the rear of the Netserver.

WARNING

To prevent rack instability while mounting the HP Netserver, ensure the rack's anti-tip foot is pulled forward out of the bottom of the rack. Failure to do so could result in injury and equipment damage.

To prevent the rack from rolling while you mount the HP Netserver, ensure the leveler screws on the rack's lower four corners are in firm contact with the floor. See Figure 13-4.

1. Lower the leveler screws on the rack's lower four corners to make firm contact with the floor. See Figure 13-4.
2. Ensure you have extended the anti-tip foot from the rack before continuing this procedure. See Figure 13-4.

NOTE The HP Netserver weighs 32 lbs. (14.5 kg.) fully loaded. It is not necessary to use two people when placing the Netserver into the rack, but it may be helpful.

3. Lift the HP Netserver by its inner-rails off the floor or pallet.
4. Move the rear of the inner-rails mounted on the Netserver just beyond the inside edge of the outer-rail assemblies. See Figure 13-6.

The mounting inner-rails should sit just inside the outer-rails with nothing preventing the Netserver from moving into the outer-rails.

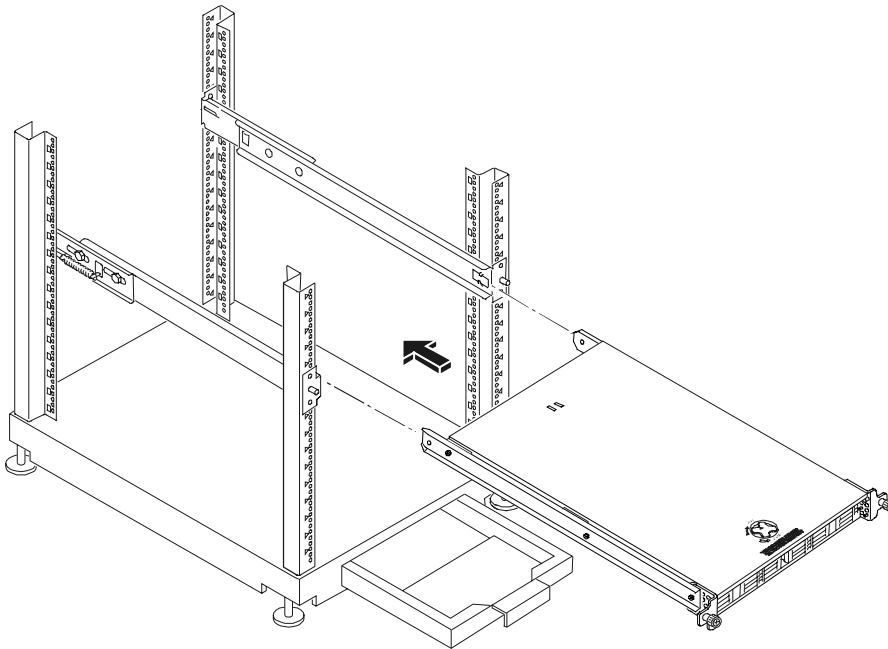


Figure 13-6. Mounting the HP Netserver

5. Slowly move the Netserver chassis into the outer-rail assemblies until the Netserver is completely in the rack. See Figure 13-6.

The securing brackets on the front of the Netserver should stop the chassis from going all the way into the rack.

6. Secure the Netserver chassis to the rack with captive screws.

Attaching the Front Bezel

The front bezel attaches to the HP Netserver by pivoting on two pins at the bottom and grasping the top pins with spring latches. The middle pins force the bezel to pivot in or out, ensuring a rotating action.

1. Position the Bezel in front of the HP Netserver LP 1000r as shown in Figure 13-7.
2. Push in on the bottom to engage the pins, allowing it to rotate up.
3. Push the bezel in at the top to engage the spring latches.

The spring latches should click when engaged.

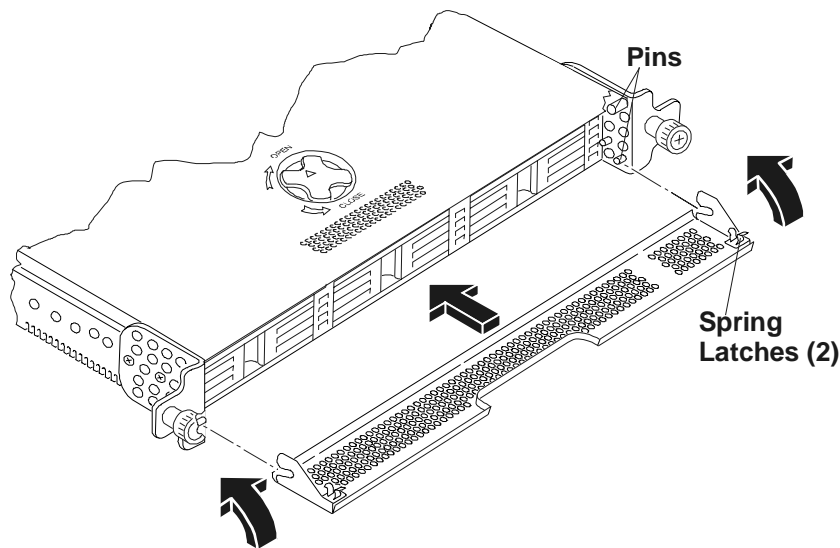


Figure 13-7. Attaching the Bezel to the Netserver

Continuing with the Rack Installation Process

After you install the HP Netserver in the rack, refer to the white paper, located on the HP web site for high-density rack configurations, to continue the process of installing and configuring the rack system. The white paper is titled *HP Netserver High Density Rack Solutions Overview (LP 1000r and LP 2000r)*.

A Specifications

Introduction

This appendix provides the power requirements, operating conditions (environmental requirements), physical requirements, hardware specifications, and video resolutions of the HP Netserver LP 1000r. The system board layout and the unused connectors are also provided. See Figures A-1 and A-2.

Requirements

The following tables provide the specifications required for normal operation of the HP Netserver LP 1000r.

Table A-1. System Power Specifications

Parameter	Characteristics
Input Type	Universal Input
Input Range	100 to 240 VAC at 50/60 Hz
Operating Current	2.6 Amps at 100 VAC 2.1 Amps at 120 VAC 1.3 Amps at 200-208 VAC 1.2 Amps at 230-240 VAC
In-rush Current	65 Amps
Operating Power	
AC Input	266 W maximum continuous power
DC Output	189 W maximum continuous power

Table A-2. Environmental Requirements

Parameter	Conditions
Temperature	
Operating	5° to 35° C (41° to 95° F)
Non-operating	-40° to +65° C (-40° to +149° F)
Humidity	
Operating	20% to 80% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing
Altitude	
Operating	-30 to 3,045 m (10,000 ft)
Non-operating	-30 to 12,180 m (40,000 ft)
Thermal Output	
Maximum Operating	867 BTU/hr

NOTE	The specifications and requirements listed above can vary if you install a mass storage device in the Netserver that has more stringent environmental limits than required for the HP Netserver. Ensure the operating environment for any mass storage devices you intend to install are compatible with the Netserver environmental requirements.
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Table A-3. Weight and Dimensions

Weight	32 lbs. (14.5 kg.) fully loaded (3 SCSI HDDs, 2 processors, and 4 DIMMs); excludes keyboard, mouse, and monitor.
Height	1.75 inches (44.5 mm)
Width	16.8 inches (428 mm)
Depth	23 inches (585 mm)

Table A-4. HP Netserver Hardware Specifications

Processors	Intel Pentium III (up to 2 processors) processors, at supported speeds of 866, 933 MHz and 1 GHz, with 256 KB level 2 cache on processor
Chipset	RCC LE chip set with 133 MHz bus speed support
Memory	Supports up to four SDRAM DIMMS for a maximum of 4 GB. Supported DIMM types: 128 MB, 256 MB, 512 MB and 1 GB unbuffered (registered), 72 bits wide, ECC single-bit correcting, multi-bit detecting.
Video	Supports up to 1600x1200, @ 65K colors, using an Embedded ATI Rage XL video chip with 4 MB SGRAM/SDRAM. Refer to Table A-5, "Video Display Modes" for more details.
SCSI	Embedded Symbios Ultra-160 SCSI dual channel controller; 160 MB/s transfer rate with two 68-pin connectors
IDE	Embedded Enhanced-IDE dual channel controller
LAN	Two Embedded Intel 82559 10/100 PCI Fast Ethernet Controllers; with Wake-on-LAN and Alert-on-LAN enabled/disabled via BIOS setup
PCI Bus	One 32/64-bit, 33 MHz speed, 5 volt PCI slot on riser board
I/O	One serial/management port and one bi-directional parallel port with ECP/EPP high-speed support; one PS/2 mouse, one PS/2 keyboard, and two USB connectors
CD-ROM	One Slimline CD-ROM drive; IDE interface; 24x speed

Table A-5. Video Display Modes

Resolution	Max. Refresh Rate @ 256 Colors	Max. Refresh Rate @ 65K Colors	Max. Refresh Rate @ 16.7M Colors
640x480	200 Hz	200 Hz	200 Hz
800x600	200 Hz	200 Hz	160 Hz
1024x768	150 Hz	150 Hz	120 Hz
1152x864	120 Hz	120 Hz	85 Hz
1280x1024	100 Hz	100 Hz	85 Hz
1600x1200	76 Hz	76 Hz	Not available

System Board Layout

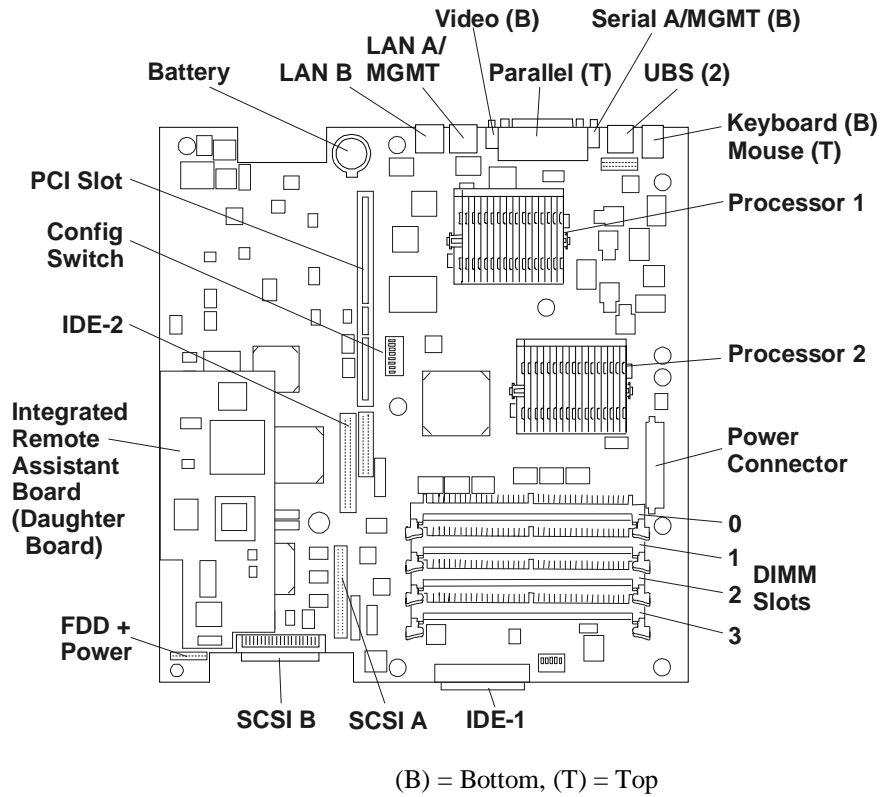


Figure A-1. System Board Components/Connectors

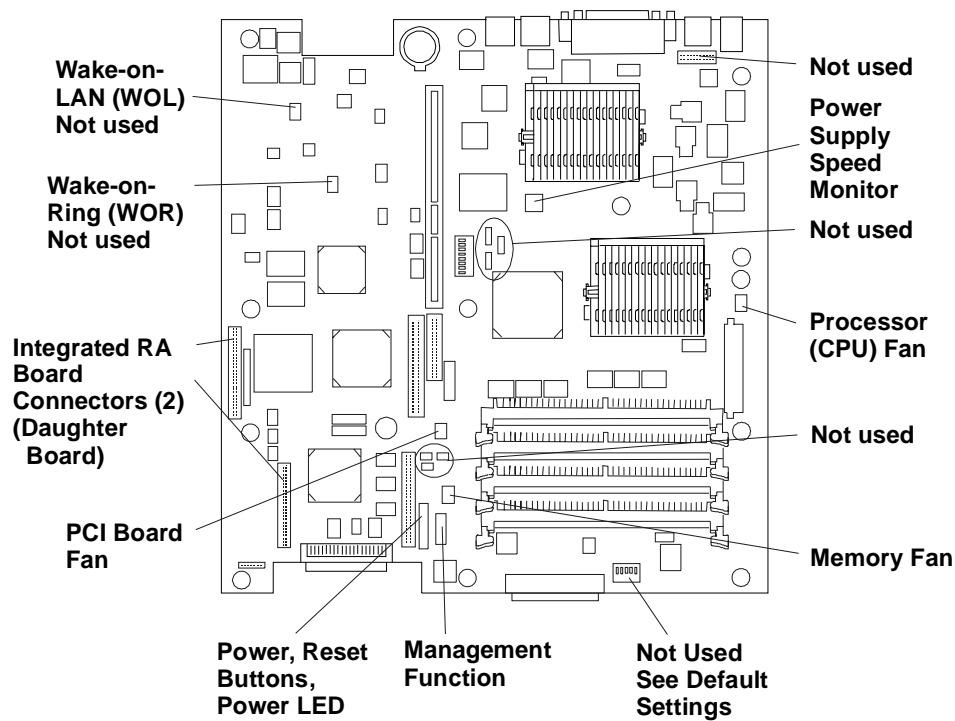


Figure A-2. System Board Connectors (Used/Unused)

NOTE If the switch is loaded, refer to the following table (Table A-6, "Default Settings") for switch default settings.

Table A-6. Default Settings

Position	On	Off
1	XX	
2		XX
3	XX	
4		XX
5	XX	

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